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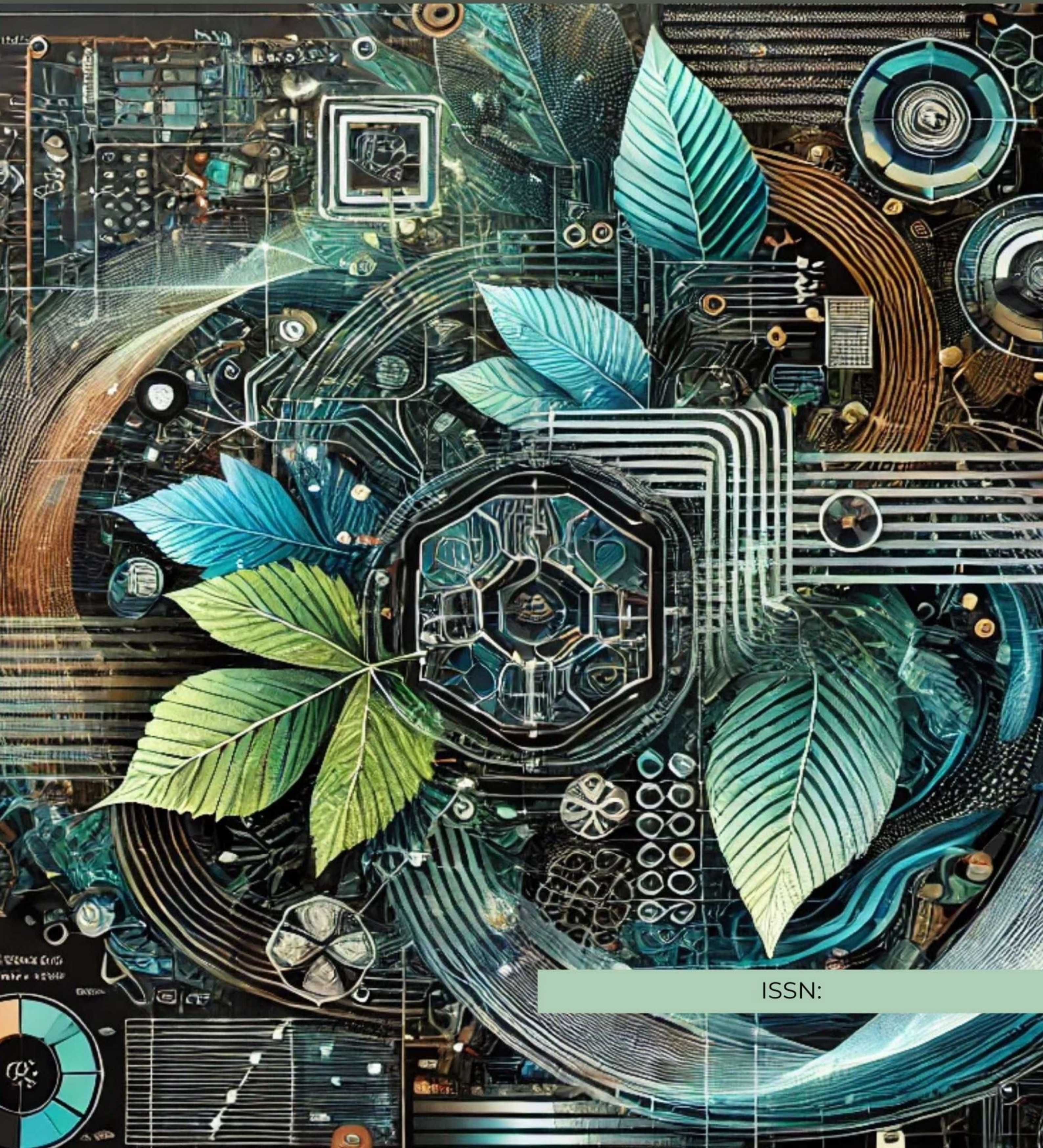

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Climate Emergency and Economic and Social Consequences: Case of Study of European Union Countries From 2013 to 2023

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ABSTRACT: Climate change is increasing global temperatures due to the greenhouse effect. Evidence such as that provided by NASA describes global warming as being caused by solar radiation that is reabsorbed in the atmosphere. Although the impact is very different in different geographic areas, the climate emergency's impact is felt globally and affects all countries. The paper analyses the correlation between climate change from 2013 to 2023 in the European Union and its economic and social consequences. The data comprise figures for the greenhouse effect, GDP, population, and energy using a parametric method and Kaya identity. After that, the paper includes the subject of using taxes to improve environmental indicators and reduce the greenhouse effect. In other words, the idea is to use private funds to improve technologies to reduce climate change.

Index Terms—Climate Consequences, Climate Emergency, European Union, Kaya Identity

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I. INTRODUCTION

Recently, it has been confirmed that carbon dioxide (CO_2), the main greenhouse gas, has been the basis of climate change for the last 540 million years, being the "dominant factor that controls global climate variations throughout the Phanerozoic (eon currently name)" [1]. Furthermore, there is wide variation in temperatures that has occurred in the period evaluated, with differences of up to 25°C. In those 485 million years, average temperatures range from 11°C in the late Pleistocene (between 129,000 and 11,000 years ago) to 36°C in the Turonian (about 90 million years ago). This is a much larger oscillation than that identified so far in previous paleoclimatic studies in a climate change that is causing rapid global warming.

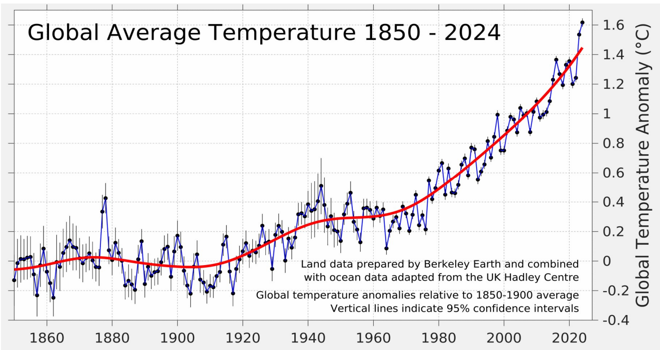

Figure 1: Global Average Temperature. Source: Berkeley Earth.

Currently, the planet's average temperature is around 16°C, which is in the lower part of the range of the current eon. However, the planet is now experiencing rapid global warming (Figure 1). The difference from previous climate changes of the last 500 million years is that this time, the increase in CO_2 concentrations in the air is motivated by human action [2]. The main reason is the massive use of fossil fuels (coal, oil, and gas), which, when burned to produce energy, release carbon dioxide that ends up largely in the atmosphere. NASA [3] confirms that global warming results when the atmosphere traps heat radiating from Earth toward space. However, the impact is different by sector worldwide [4]; the main impact is in energy with 73.2% (17.5% energy use by construction activities, 16.25% by transport, and 24.2% by industry), followed by agriculture, forestry, and land use with 18.4%, and finally 5.2% for others and 3.2% for waste. It also differs in terms of countries, with China being responsible for 28% of CO_2, followed by the United States with 15% and 1% for Africa. Another example is transport, which in the United States is the largest contributor, whereas in Brazil, the highest percentages belong to agriculture and land use change.

Other evidence of climate change [5] is the increase of drylands – areas without water resources – and the degradation of land, soil erosion, wildfires, and dust and sandstorms. Now, around 46% of all land is made up of drylands, inhabited by approximately 3 billion people. This means around 40% of the world's population is at risk of these impacts. In addition, increasing and irreversible damage is being caused to all ecosystems, increasing animal migration rates and degradation of forest parks [6]. In the long term, air pollution will have an important impact

on citizens [7]. According to the World Health Organization (WHO), global warming causes around 7 million deaths every year, and the impact is very important in children, who are at a higher risk of developing respiratory complications. Besides the physical impacts on citizens, climate change has contributed to the appearance of new concepts to address its negative consequences on mental health. Eco-anxiety, eco-guilt, and ecological grief [8] are used to describe different impacts of climate change on people's psychological well-being.

Regarding the economy and business, there is a consensus that droughts, environmental degradation, and conflicts over resources affect a large proportion in developing countries [9]. The 2015 Paris Conference (COP21) concluded with a formal agreement under the United Nations Framework Convention on Climate Change (UNFCC), where the nations made a formal commitment to prevent warming of more than 2°C (above pre-industrial temperature) by 2050 (UNFCCC, 2018) [10]. Consequently, companies are treating climate change as a strategic priority [11], since the climate emergency poses big risks, such as decreasing natural resources, but it could also create opportunities like competitive advantage and profitability if companies change their priorities [12]. Therefore, companies are increasingly aware of their environmental impact and are creating strategies to transparently determine zero-emissions targets and how they will be achieved. CPD Worldwide [13] shared a report on companies that are at the forefront of the fight to prevent climate change.

Following this approach, countries and companies have the target of Net Zero [14], which is the balance between greenhouse gas emissions and removal from the atmosphere to achieve a neutral effect from a global point of view. Therefore, substantial economic investments and changes in multiple sectors are required. A transition to renewable energies is necessary, such as solar and wind, and new alternatives such as green hydrogen or even gold. This leads us to the fact that maintaining the temperature and preventing its rise means renewing agricultural systems, transforming factories, replacing petrol and diesel vehicles with electric ones, and replacing most of the world's electric power plants powered by fossil fuels [15].

However, during the Covid-19 crisis, two phenomena were intertwined that harmed society in general and the economy in particular, generating non-linear effects that could cause significant losses [16]. Disturbances in companies' production and citizens' consumption increased unemployment and reduced salaries; in the end, there was a decrease in society's well-being, which caused social conflicts.

The next aspect to consider, which affects the future of the planet, is how much global warming costs in economic terms. The NRDC (Natural Resources Defense Council) [17] estimated the cost of climate change at $1.9 trillion at the end of this century in hurricane damage, buildings, energy costs, and water costs. To solve it, there may be an intermediate solution, namely mitigation, as mentioned above, to ensure that net greenhouse gas emissions are zero. However, during the Covid-19 crisis, economic activity stopped rapidly and caused a great recession, but emissions were only reduced by 8% [18]. On the other hand [19], analyses and studies estimate that the Net Zero approach could cost between 2% and 6% of annual income (assuming that it is between $2 billion and $6 billion).

Recently, at COP29 in Baku, Azerbaijan [20], the membership reached an agreement raise $300 Million until 2035 for climate change. However, this amount seems impossibly low for mitigation, making it a likely path to a disastrous 3°C increase in global warming [21].

Another option would be, as established by Berkeley Earth (Figure 2), adaptation to temperatures between 2.5°C and 3°C [22].

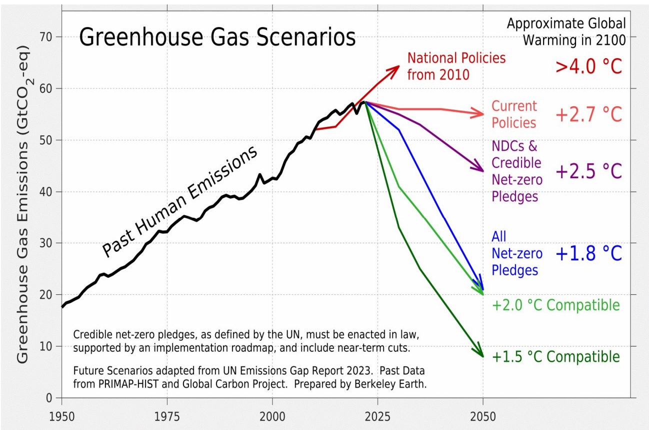

Figure 2: Global Average Temperature. Source: Berkeley Earth.

However, the costs would be high for developing countries, which could be around half a trillion dollars in 2050 [23]. In global terms, it can be estimated that the global costs between mitigation and adaptation could be between $100 billion and $150 billion in the coming decades [24], which could mean between $3 billion and $5 billion each year.

One of the options currently being analysed would be solar geoengineering to reduce global temperature [25] [26]. Its origin was the 1991 eruption of Mount Pinatubo (Philippines). This sent ash and smoke up to 35 km and caused significant deviation of solar heat, which led to a 0.7°C drop in temperature in some areas. However, this technology is not proven and could cause negative effects and distract from the main objective, which is the reduction of excess carbon in the atmosphere. Furthermore, this would only be a patch, since ocean acidification, deforestation, and agriculture would continue to deteriorate [27]. There are other options like such as hydrogen green or gold or nuclear fission, but now they are only projects, and they are very expensive or are questioned by society, as in the case of the last one.

It seems that the only viable way to decarbonise is to eliminate fossil fuels in favour of renewable energy. Already in 2021, the International Energy Agency [28] established that to reach the goal of zero emissions by 2050, all investments in fossil fuels should be stopped.

On the other hand, the percentage of energy generated by fossil fuels went from 80.3% in 2009 to 80.2% in 2019, and that of renewable energies went from 8.7% to 11.2% in the same period, which implies very slow progress [29]. Therefore, the change to renewable energies must be accelerated, carbon taxes must be introduced, and in many cases, subsidies for fossil fuels must be eliminated; this may imply an increase in the prices of products derived from them. In 2020, according to the IMF [30], subsidies for fossil fuels reached $6 trillion, which represents 6.8% of GDP. If they are eliminated, this will produce an unprecedented economic and social crisis.

II. MATERIALS AND METHODS

Study Area

The study area is the 27 European Union countries from 2013 to 2023. It includes 448.8 million citizens, covers an area of 4 million km^2, and represents 14.8% of the global economy [31]. In 2023, the European Union achieved an 8% net reduction in greenhouse emissions compared to

the previous year, and they are 37% lower than in 1990 [32]. In the same period, GDP increased by 68%. This takes us on the path to achieve the objectives in 2030 (Figure 3).

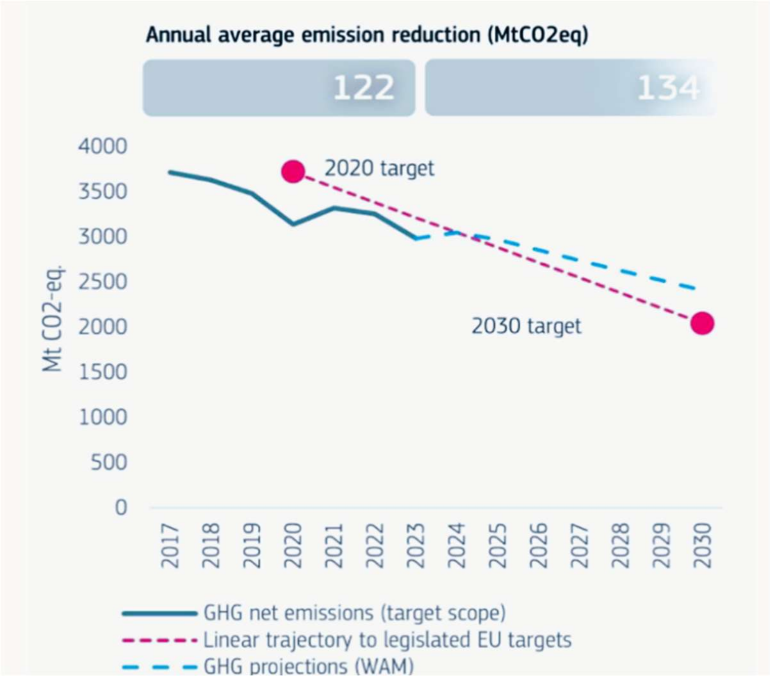

Figure 3: European Target 2030. Source: European Commission.

Data Source

The analysis includes the following types of variables [33-34]:

1. Countries: European Union countries (27 items).
2. Greenhouse Emissions (297 Items)
3. Population (297 items)
4. Gross domestic product GDP (297 items)
5. Energy (297 Items)
6. Total Items 1.118 items

Statistical Results

Regarding the statistical model, a regression model with interactive terms can be represented using the following formula:

$$Y = \beta 0 + \beta 1X1 + \beta 2\ X2 + \beta 3\ X3 + \ldots\ldots + \beta n\ XN$$

where *X* represents the interaction between independent variables and *Y* is a dependent variable.

The SPSS program was applied to find the relationship between the reduction of greenhouse emissions, population, GDP, and energy.

Combining this formula with a linear regression between greenhouse emissions and other variables yields the following:

Greenhouse gas emissions in tonnes = β1 Population + β2 Energy + β3 GDP (βN: Constant)

The results are shown below (Tables 1, 2, 3, and 4).

Table 1. Parameters of Linear Regression

Parameter	Figure
R	0.962
R^2	0.925
Correct R^2	0.924
Error tip of estimation	14,373.86
Statistical changes; R^2	0.925
Statistical changes in F	1206.80

Table 2. Descriptive statistics for selected variables.

Variable	Mean	Standard Deviation	N
Greenhouse gas emissions	37,721.25	52,264.24	297
Population	16,475,429.91	21,793,698.09	297
Energy	23,059.03	31,781.07	297
GDP	504,427.16	803,112.85	297

Table 3. Pearson Correlation

Variable	Greenhouse gas emissions	Population	Energy	GDP
Greenhouse gas emissions	1.000	0.959	0.923	0.870
Population	0.959	1.000	0.943	0.877
Energy	0.870	0.877	1.000	0.852
GDP	0.923	0.943	0.960	1.000

Table 4. Autoregressive integrated moving average model (0,0,9)

Parameter	Figure
Predictor number	3
Standard R request	0.955
R^2	0.13
Root squares mean error	15,576
Medium average percentage error	24,786
Medium average error	8,324
Bayesian information criteria	19,422
Ljung-Box Q (18) (Statistics)	65,706
Ljung-Box Q (18) (DF)	17

Kaya Indicator

The Kaya indicator [35] is a mathematical expression used to describe the relationship between factors that influence energy-related trends and carbon dioxide emissions released into the atmosphere.

The expression is:

$$F = P * G/P * E/P * F/E$$

Where:

- *F* is global CO_2 emissions from human sources
- *P* is global population
- *G* is world GDP
- *E* is global energy consumption

And:

- *G/P* is GDP per capita
- *E/G* is the energy intensity of GDP
- *F/E* is the emission intensity of energy

This expression has been adapted to the data of the European Union from 2013 to 2023 (Figure 4)

Year	Greenhouse	Population	GDP/ Population
2013	0	0	0
2014	-1.99	0.12	2.23
2015	0.99	0.15	3.55
2016	2.55	0.24	2.46
2017	-1.71	0.15	4.02
2018	-1.64	0.14	3.35
2019	-5.17	0.19	3.43
2020	-5.36	0.20	-4.03
2021	4.55	-0.26	9.22
2022	-5.85	-0.01	9.13
2023	-3.98	0.67	5.80

Year	Energy/GDP	Greenhouse/Energy
2013	0	0
2014	-4.69	0.47
2015	-5.80	3.38
2016	-4.95	5.04
2017	-4.24	-1.47
2018	-3.90	-1.10
2019	-6.43	-2.21
2020	-3.57	2.06
2021	-4.20	0.18
2022	-13.75	0.04
2023	-7.75	-2.27

Because of the figure, please find attached Figure 4.

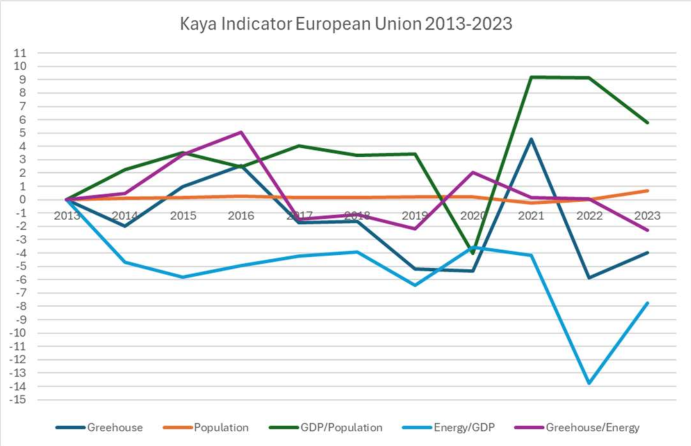

Figure 4: Kaya Indicator. Source: Authors.

III. DISCUSSION AND CONCLUSSION

In the regression model, standard R, R^2, and the correct R^2 show a good figure near 95%, indicating that there is a relationship between future greenhouse emissions and population, energy, and GDP.

Furthermore, the statistical changes in R^2 also show that the data fit the regression model well. Finally, the statistical changes in F confirm the hypothesis, since the figure is higher than 2.5. Regarding the Pearson correlation, the table 3 shows a good correlation between all variables, with figures between 0.85 to 0.9.

Based on the analysis, the ARIMA model's predictor number is 3, which means in 3 years, the root means square error (RMSE; 15,576) is correct, having compared it with the average (24,786). Furthermore, the medium absolute percentage error and medium average error confirm the findings.

The Bayesian information criterion (BIC), which estimates the likelihood that a model is predictive, is slightly higher than expected, but the Ljung-Box Q, which examines the autocorrelations of the residuals, is sufficient to confirm the idea of linear regression.

Regarding the Kaya indicator, it is observed that the Covid-19 crisis affected all variables equally, except the population – which remained constant during the years of analysis – from the end of December 2019 to mid-to-late 2021, when there is an evident recovery.

However, this indicates that, starting at the end of 2022, the same situation as before the crisis returned. Therefore, there has not been much learning about climate change, since we are continuing the same trend as a few years ago. This is not a good lesson, since it indicates a short-term vision on the part of the states and their rulers.

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Financial Accessibility, Labour-Market Conditions and Self-Reliant Propensity as Predictors of Entrepreneurial Intention among University of Ibadan Postgraduate Students

BY

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ABSTRACT: Entrepreneurship intention is an approach that tends to reduce the rate of unemployment and maintain high standard of living in developing countries. Studies have established that many small and medium enterprises in Nigeria's economy kept folding up due to demotivation by government policy and many environmental factors. Also, past literature revealed a shortage of empirical investigation regarding financial accessibility, labour-market condition and self-reliant propensity in predicting entrepreneurship intention. This paper investigated financial accessibility, labour-market condition and self-reliant propensity as predictors of entrepreneurship intention among University of Ibadan postgraduate students. The study was anchored to Constructivism and Theory of Planned Behaviour while non experimental design of survey research type was adopted. Multi-stage sampling procedure was employed to select three faculties, four departments each and 300 postgraduate students. Two validated instruments: Financial accessibility, Labour-market Condition and Self-reliant Questionnaire (r=0.81) and Entrepreneurship Intention Questionnaire (r=0.87) were used for data collection. Data were analysed using correlation and multiple regression at 0.05 level of significance. Significant relationship exists between financial accessibility and entrepreneurship intention, r=0.20); between labour-market condition and entrepreneurship intention, r=0.19); between self-reliant propensity and entrepreneurship intention, r=0.57). The variables jointly explained 31% of the variance observed in entrepreneurship intention. However, financial accessibility (β = 0.04; t = 0.74) and labour market condition (β = 0.03; t = 0.58) did not relate significantly to entrepreneurship intention. Government should formulate a policy that will make available funds to be accessed by postgraduate students for the establishment of Businesses that will empower and make them self-reliant.

Key words: Financial-accessibility, Labour-market, Self-reliant, Entrepreneurial-intention
Words count: 250.

I. INTRODUCTION

Entrepreneurship is a primary driver of economic activity, development, and growth. It is a medium or vehicle for creating employment opportunities, thereby helping to reduce unemployment, promoting sustainable, viable innovative ideas and the socio-economic well-being of the people. Hence, entrepreneurship has been acknowledged as a means of generating economic gains. The economy is more sustainable when there are individuals who can integrate technical skills with business acumen. It usually entails inner courage, ambition, and the will to stand on one's own feet. Rapid changes brought on by a new phase of globalization, combined with a deteriorating Nigerian and global economy, have reduced recruitment and significantly altered employment opportunities in many of the traditional sectors that previously absorbed the majority of young people and university graduates. Graduate students in Nigeria are more likely than ever before to see the potential of creating their own businesses as a positive rather than a secondary career choice. However, numerous factors influence the amount to which students are inclined to do so and the opportunity for them to acquire critical qualities competences depending on their entrepreneurial intentions. For ages, entrepreneurship has been seen as the essence of business and as a concept. The evolution of contemporary economic and social life is vital. (Abadi., Mahdavian & Fattahi, 2020). Fatoki (2014) defines entrepreneurship as the ability; desire to take on the invention, organisation, and administration of a profitable endeavor, with all its dangers, in exchange for a profit. On the other hand, an "entrepreneur" is a person who starts a business, identifies an opportunity, pursues it, establishes and manages a business enterprise for the principal purpose of profit and growth.

Entrepreneurship intention means the starting point of an entrepreneurial action as intention comes before entrepreneurial activities. Entrepreneurial intention refers to an individual's intention to choose to be an entrepreneur for his or her profession or career. Entrepreneurial intention therefore leads to entrepreneurial actions and the entrepreneurship program are planned in order to inculcate positively an entrepreneurial intention and also impact in individuals both the required skills and knowledge. Bird (1988) in his study discovers that students tend to exhibit intense entrepreneurial attitudes and intentions compared to those who abscond from entrepreneurship programs. He also emphasized that individuals who completely participated in entrepreneurial program perceived themselves as more analytical, creative and more effective in influencing other people to gain access to support and assistance in realizing opportunities, handling and capable of adapting to different situations without difficulty. Entrepreneurial education focuses more on strong development of students' competencies and the essential skills needed in the market context in the future. Students with a high degree of entrepreneurial intentions tend to make use of the available opportunity to obtain the essential human cognition and skills. As a result, learner entrepreneurship activities will involve the intentions to avail the available entrepreneurship education.

Financial capital is the aggregate sum of money possessed and maintained by individual Kim Eujin & Yoon Sungjun, 2021). Also, Nosková & Peráček (2019) assert that financial accessibility implies having access to finance, particularly cheap funds, information and knowledge for investment motives. Financial accessibility involves the provision and usage of different affordable financial services. Also, Stuetzer, Obschonka, Brixy, Sternberg & Cantner (2014) assert that financial accessibility is continuously cost effective and a significant financial service for the deprived populace in order to grow a business. In addition, individuals are strengthened to meet future challenges and create new or expanding existing job opportunities once they contribute to saving and collecting the essential funds which can be used in a variety of entrepreneurial investments (Schaper, Volery, Weber & Lewis, 2011). Large enterprises are

not favoured towards government policies while the small businesses are also struck with challenges related to growing as a result of inaccessibility to finance. Snieska, Navickas, Grencikova, Safrankova & Sikyr (2020), recognized credit accessibility facilities as an important factor responsible for small start-ups success factors in their bid to build productive capacity, compete, and ideate business and to reduce poverty level in developing countries. Patzelt & Shepherd (2011) expressed that borrowing businesses with longer ties with banks do encounter less barrier regarding collateral, less tendency to depend on costly trade credit and also less barrier on their decisions regarding investment compared to businesses with shorter ties with banks. Similarly, Kummitha & Kummitha (2021) opined that either small or decentralized banks are more accessible to disburse credit facilities to start-ups and small business ventures when compared to large banks were decisions made by the managers are centralized. Start-up businesses are constrained with insufficient internal funds, thus make use of external financing so as to develop and be rooted (Kim, Koo & Han, 2021).

Self-reliance is related to self-sufficiency. It connotes handling things for oneself instead of someone else doing it for us. Self-reliance has to do with perceptive insight in efforts and ability to recognize, use and manage smoothly both personal and collective resources, natural or human in the immediate environments in order to upgrade people’s life and standard of living (Olayiwola, 2012). Consequently, he realized that self-reliance militates against dependency behaviour on development as it rests on the government shoulder. It deals with the effort to depend on an individual's abilities and efforts. Self-reliant individual is someone who performs, someone who has possessed some values and skills to enhance him and his environment. Entrepreneurship intention has been observed as an approach to decrease the rate of unemployment and maintain a high standard of living in developing countries. The Nigerian labour market is often characterized by wage differences between the wage-employment sector (private-public sector) and self-employment (Ogwumike, Alaba, Alayande, 2006).

Fluctuation in labour market is a typical example of a fast changing factor. However, the institutions of the educational systems are constantly evolving more gradually. It is a notion that entry in to labour market is favorable where there is availability of jobs as it is in higher education when admission levels are high. Some of the small and medium enterprises in Nigeria's economy are folding up due to demotivation to the entrepreneurs by government policy and many environmental factors. Literature revealed shortage of empirical investigation regarding financial accessibility, labour-market condition and self-reliant propensity in predicting entrepreneurship intention. The study investigated financial accessibility, labour-market condition and self-reliant propensity as predictors of entrepreneurship intention among university of Ibadan Postgraduate students

II. RESEARCH QUESTIONS

The following research questions guided this study

1. What is the direction and strength of relationship among financial accessibility, labour-market condition, self-reliant propensity and entrepreneurship intention among university of Ibadan postgraduate students?

2. To what extent will financial accessibility, labour-market condition and self-reliant propensity predict entrepreneurship intentions among university of Ibadan postgraduate students?
3. What are the relative contributions of financial accessibility, labour-market condition and self-reliant propensity to the prediction of entrepreneurship intention among university of Ibadan postgraduate students?

III. METHODOLOGY

The study was anchored to Constructivism and Theory of Planned Behaviour while non experimental design of correlational research type was adopted. The population of the study comprised all postgraduate students of the University of Ibadan. Multi-stage sampling procedure was adopted in selecting the sample for the study. University of Ibadan was clustered along fifteen faculties. Simple random sampling technique was used to select three faculties, four departments each per faculty and 25 postgraduate students per department respectively. In all, a total of three faculties, 12, departments and 300 postgraduate students participated in the study. Two instruments were developed and validated, namely: Financial Accessibility, Labour-market Condition and Self-reliant Questionnaire (FALCSQ) which elicited responses on three constructs which are Financial Accessibility (10 items), Labour-market Condition (10 items) and Self-reliant Questionnaire (10 items). The reliability of this instrument was established using Cronbach Alpha and r=0.81. The second instrument: Entrepreneurship Intention Questionnaire (EIQ) with 10 items and r=0.87. Data were analysed using Pearson Moment Product Correlation and Multiple regression at 0.05 level of significance.

Results and Discussion

The research questions raised in the study were answered in inline and in the order by which they were raised.

Research Question One: What is the direction and strength of relationship among financial accessibility, labour-market condition, self-reliant propensity and entrepreneurship intention among university of Ibadan postgraduate students?

Table 1: Correlation Matrix Table of Financial Accessibility, Labour-Market Condition, Self-Reliant Propensity and Entrepreneurship Intention

Variables	Financial Accessibility	Labour-Market Condition	Self-Reliant Propensity	Entrepreneurship Intention
Financial Accessibility	1			
Labour-Market Condition	0.419**	1		
Self-Reliant Propensity	0.310**	0.361**	1	

Entrepreneurship Intention	0.202**	0.189**	0.565**	1

Significant @ p < 0 .05.

Table 1 revealed that significant low positive correlations exist between financial accessibility and entrepreneurship intention, r = 0.20, 0.000, P < .05; between labour-market condition and entrepreneurship intention, r = 0.19, 0.001, P < .05; between self-reliant propensity and entrepreneurship intention, r = (0.565), 0.000, P < .05. This implies that there are significant relationships among financial accessibility, labour-market condition, self-reliant propensity and entrepreneurship intention in the study.

Research Question Two: To what extent will financial accessibility, labour-market condition and self-reliant propensity predict entrepreneurship intention among university of Ibadan postgraduate students?

Table 2: Regression Summary and ANOVA of Financial Accessibility, Labour-Market Condition, Self-Reliant Propensity and Entrepreneurship Intention

Multiple R = 0.567
R Square = 0.321
Adjusted R Square = 0.314
Standard Error = 4.375
Analysis of Variance

Source of Variance	Sum of Square	Df	Mean Square	F	Sig.
Regression	2681.77	3	893.92		
Residual	5666.22	296	19.14	46.69	.000
Total	8347.99	299			

Significant @ p < 0 .05.

Table 2 indicates that there is joint influence between the independent variables: financial accessibility, labour-market condition and self-reliant propensity and the dependent variable (entrepreneurship intention) ($F (3, 296) = 46.69$; $R = 0.567$, $R^2 = 0.321$; $p < 0.05$). This implies that when financial accessibility, labour-market condition and self-reliant propensity are taken together, they jointly relate with entrepreneurship intention. The table further reveals a multiple regression adjusted $R^2 = 0.314$ which shows that independent variables accounted for 31% of the total variance in entrepreneurship intention while the remaining 69% may be due to other factors and residuals not investigated in the study model. Furthermore, the finding reveals that there was a composite contribution of financial accessibility, labour-market condition and self-reliant propensity in the prediction of entrepreneurship intention.

Research Question Three: What are the relative contributions of financial accessibility, labour-market condition and self-reliant propensity to the prediction of entrepreneurship intention among university of Ibadan postgraduate students?

Table 3: Relative Contributions of Financial Accessibility, Labour-Market Condition, and Self-Reliant Propensity in the prediction of Entrepreneurship Intention

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	6.812	1.763		3.863	.000
Financial Accessibility	0.054	.073	0.040	0.739	.460
Labour Market Condition	0.048	.083	0.032	0.579	.563
Self-Reliant	0.595	.055	0.565	10.798	.000

Significant @ p < 0 .05.

Table 3 indicates that there is a significant relative contribution of one Independent variable (self-reliant) to entrepreneurship intention. Self-reliance ($\beta = 0.565$; $t = 10.798$; $p < 0.05$), contributed significantly to entrepreneurship intention. However, financial accessibility ($\beta = 0.040$; $t = 0.739$; $p > 0.05$) and labour market condition ($\beta = 0.032$; $t = 0.579$; $p > 0.05$) did not relate significantly to entrepreneurship intention. This indicates that self-reliant made independent contributions of 56.5% and 57%, in the prediction of entrepreneurship intention. Hence, self-reliance is the most influential in the prediction of entrepreneurship intention among university of Ibadan postgraduate students.

IV. DISCUSSION OF FINDINGS

Based on the findings, it could be concluded that there is a significant high correlation between self-reliant propensity and entrepreneurship intention among the sampled postgraduate students in University of Ibadan. The finding aligns with the assertion of Lange (2012) that the idea of self-reliance to an entrepreneur may be a leeway to his or her inbuilt character and may express the fundamental thought process. It is noted that individuals who are self-employed are more satisfied because of the freedom they enjoy managing their business affairs. Also, the finding is not at variance with Mukhtar, Gwazawa & Jega (2018) who used only an empirical review method without data to examine how entrepreneurship development could be used to diversify Nigerian economy. It was found among others by the study that entrepreneurship is a practical mechanism for Nigerian economy diversification. It was recommended by the study that the government should support entrepreneurs with finance, licenses/permit access, taxes, holidays, and inclusion of entrepreneurship education in school curriculum of primary to tertiary education.

The findings also show that a low positive significant relationship exists between financial accessibility and entrepreneurship intention. The findings appear in this manner because capital is very paramount in the establishment of a business, at least to secure start-up equipment and purchase of necessary materials. The findings align with who perceived access to finance as either from internal or external sources and that it constitutes entrepreneurs sourcing for capital on their own, most especially from personal savings, depreciation and sales of assets, profits

retained, which however form the crucial part of entrepreneurship survival and development. Financial accessibility to business is considered as a barrier for a lot of start-up businesses across the world (Abdesamed, 2014). Kerr & Nanda (2009) confirm that being self-employed depends on possessing both entrepreneurial vision and having access to the required financial resources to implement it. In like manner, the result agrees with Gilenko & Chernova (2021) who state that individuals possessing higher financial capacity are more probable to be cautious when they are found amidst risky business investment decisions. Supporting this, Ayyagari (2016) emphasised that insufficient financial resources is a significant challenge when launching a new business for further growth while Idowu (2010), recognised credit accessibility facilities as an important factor responsible for small start-ups success factors in their bid to build productive capacity, compete, and ideate business and to reduce poverty level in developing countries.

On the contrary, the findings reveal a low positive significant relationship between labour-market conditions and entrepreneurship intentions. The result came out in this manner because people at times do not pay attention to the Labour Market condition impact on entrepreneurship intentions.The business skills of entrepreneurs make business more successful and may lead towards sustainable competitive advantage as well (Shehnaz & Ramayah, 2015). Two entrepreneurial characteristics determine business success and these include psychological factors and education experience (Sarwoko & Surachman, 2013). Higher education is considered to have better impact in entrepreneurship because it reflects the fact that they are on average more capable. Though some of these traits could be inborn, training entrepreneurs in management training improves management competencies while skills training is a powerful tool for job creation (International Labour Organisation, 2014). In addition the findings corroborate Okoli & Okoli (2013) who examined how Nigerian youths can be empowered by developing them in entrepreneurships and submitted that youths cannot be prepared for every situation that operate in the labour market, however, giving them skills and support to help deal with challenges likely to be encountered is something of great value.

V. CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, it is concluded that, there are positive significant associations among financial accessibility, labour-market condition, self-reliant propensity and entrepreneurship intention among university of Ibadan postgraduate students. The findings necessitate further investigations into the predictors of entrepreneurship intention in the Nigerian economy at large. Therefore, it is recommended that:

1. Government should formulate a policy that will make available funds to be accessed by postgraduate students for the establishment of Businesses that will empower and make them self-reliant.
2. Graduates should be willing to establish their personal business and become employers of labour, instead of job seekers.
3. The economy stakeholders should create an enabling environment that will engender new business.
4. Graduates should devise a means to source for business capital either through personal savings or bequeathed wealth in order to be self-reliant.

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The Design of an Innovative Waste Bin for Effective Waste Segregation in Primary School Settings

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ABSTRACT: Waste management remains a critical environmental challenge, particularly in educational institutions where improper waste segregation impedes resource recovery and exacerbates environmental degradation. Conventional waste bins have failed to facilitate effective waste sorting, resulting in mixed waste streams and suboptimal recycling outcomes.

This research involves developing a three-compartment waste bin with color-coded sections and clear signage to support waste sorting at the source. Waste characterization studies were conducted to compare the innovative bin's performance with conventional bins in terms of waste generation and segregation.

The results revealed the innovative waste bin greatly enhanced waste generation and segregation. The novel waste bins generate more waste (9680g) than the conventional bins (7440g). Additionally, the new bin design improved the sorting of recyclables such as paper, plastic, and polythene bags compared to the conventional bins. This design supported better recycling efforts which in turn encouraged students to dispose of their waste more responsibly. The study revealed that students are more likely to participate in waste segregation when provided with intuitively designed waste bins. The study recommends that waste management practices in educational institutions can significantly improve with innovative, user-friendly waste bins with distinct compartments.

KEYWORDS: waste, segregation, innovative, waste bin, recycling

I. INTRODUCTION

Nigeria faces a growing solid waste crisis due to a lack of modern waste management technologies [1]. The country generates 32 million tonnes of waste annually, with plastic waste a significant concern [2]. Nigeria's rapidly growing cities, fueled by high population and urbanization rates, struggle with solid waste management due to weak infrastructure and limited waste segregation [3]. This is particularly concerning as proper waste management is crucial for a developing nation. Daily waste generation per person is high and the country is projected to reach a staggering 107 million tonnes by 2050 [4].

Most developed countries have established a comprehensive program for sorting waste at source and recycling useful waste [5]. In contrast, municipal solid waste (MSW) is still indiscriminately disposed of in Nigeria, leading to blockage of canals, and drainages and causing pollution to water bodies [3]. Nigeria's waste management challenges require effective solutions that involve proper collection and sorting at the source. MSW sorting requires the use of smart waste sorting equipment such as smart recycling bins [5]. Recycling averts huge volumes of solid waste disposed at landfill sites, gives employment opportunities, decreases emissions to the environment, abates waste management costs by creating revenue, and saves resources [6]. Studies have shown that recycled bins with designated slots for recyclables influence user behavior, thereby enhancing better waste sorting habits and separation efficiency [7], [8], [9]. In many schools in Nigeria, single waste bins are still provided whereby wastes are mixed and disposed at available dumpsites. This study is aimed at providing an alternative waste bin through the design of an innovative bin with a waste sorting system. The performance of the bin would also be assessed with the single waste bins.

II. MATERIALS AND METHODS

Study Area

The research was conducted at the University of Lagos Staff School, a primary school in Akoka, Nigeria. It was established at the University of Lagos, one of Nigeria's foremost Universities, in 1966. The school has a creche, nursery, and primary sections. As at the time of the study, there are about 1000 pupils in the school.

The school manages its waste through the employment of cleaners who are in charge of daily sweeping of the classrooms and the school environment. The classrooms are cleaned from Monday to Friday in the mornings by 7.00 am and in the afternoons by 3.00 pm., Waste generated is comingled and collected in single waste bins placed both inside and outside the classrooms. Waste is thereafter taken to containers placed outside the school premises.

The private waste companies in charge of waste management in the University community collect the waste and transfer it to the University's recycling center. Waste is sorted for recyclables manually. However, only 1% of waste materials are recovered at the recycling center, the rest is landfilled [10], [3].

Designed Waste bin

The designed bins were constructed with paper cardboard and plywood. Paper cardboard was obtained from one of the supermarkets in the university community while plywood was obtained from a market in Yaba, Lagos. The bin was layered with plywood and divided into three multiple compartments for efficient separation of waste types. Each compartment was made of paper cardboard. The bins were coloured to enhance the easy identification of waste bins and further influence the students' recycling behaviour. In addition, waste types were illustrated with letter labels and visuals (Fig. 1).

Fig. 1**:** Designed bin

A total of 120 Grade 5 pupils participated in the study. Waste bins were placed in the classrooms where students could easily access them. Waste collection and analysis commenced by 3:00 pm at the end of the school day. We also tested the utility of the designed bin with the traditional bins used in the school. The quantification and characterization of waste were carried out for two consecutive weeks (Monday to Friday) in July 2024. The sampling method involved direct sampling of waste from bins, where waste was manually sorted, classified, and weighed.

III. RESULTS AND DISCUSSION

The percentage composition by weight of waste fractions for both bins is shown in Fig. 2. Waste generated had organic waste content for both bins at 46% and 43% (designed and single waste bins) respectively. The percentage composition of recyclable materials such as nylons and paper was high for the single waste bins (57%) and newly designed bins (54%), though with little variations in paper composition. The percentage of organic waste and recyclables presented in this study is higher than those reported by [11] (17%, 20.1%) for a primary school in Italy. Organic waste fraction from the food canteen present in the school was not accounted for. The high percentage of organic waste from the present study is mainly from the consumption of food, snacks, and fruits by the pupils.

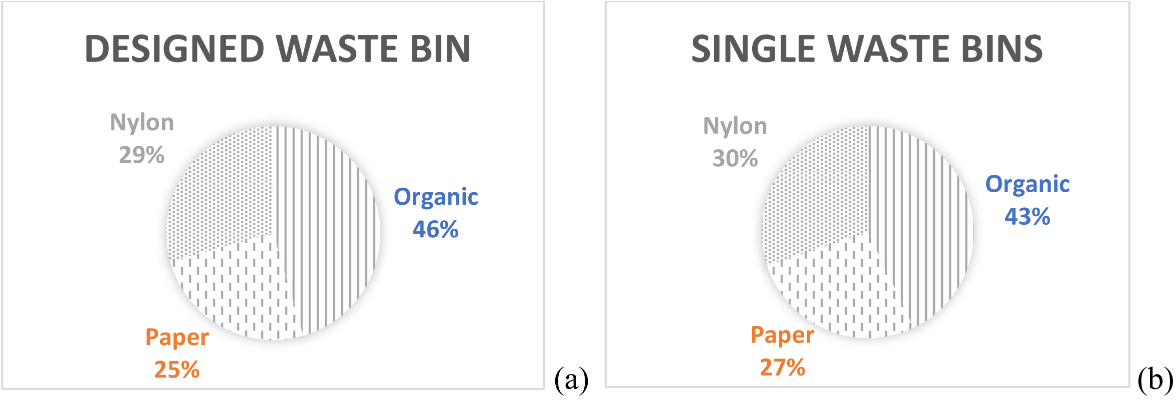

Fig. 2: Distribution of waste components in both waste bins

Waste generated in grams by the pupils with the use of both bins is shown in Fig. 3. The quantities of waste generated by the designed bin (9680 g) were higher compared to the single waste bins (7440 g). Organic waste had the highest amount of waste, followed by nylon and paper in the newly designed bins. 4400 g of organic waste was generated, followed by 2830 g of nylon and 2450g of paper respectively. This further showed greater recycling compliance by the pupils with the use of recycled bins.

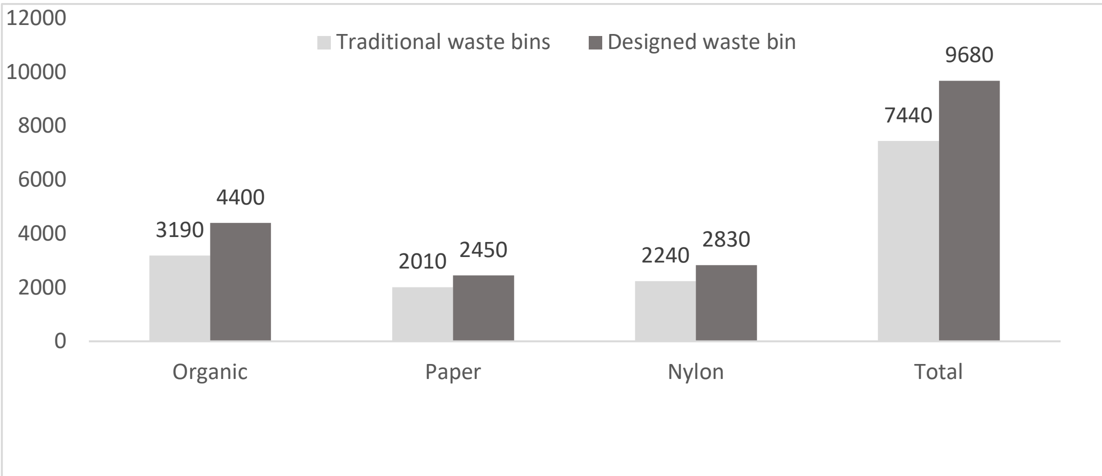

Fig. 3: Number of recyclable materials in both waste bins

The results revealed that the recycling potential of waste components increased when waste was separated from the source. The findings of this study are consistent with prior studies by [7], [12] and [13]. It was further emphasized that recycling containers promote the separation of recyclable materials from non-recyclables which reduces contamination in recycling streams [14]. In contrast to the conventional bin, where waste had to be sorted individually and thereafter weighed into individual components, the recycled bin allowed students to sort their waste directly from the source into respective waste types, thereby saving time.

This study revealed that the attitude of the children under investigation in the primary school towards waste recycling changed. The introduction of waste bins with colors and visuals

attracted the children thereby influencing their attitude towards waste management. This study corroborates findings by [7] that well-designed waste bins produce positive behavioral outcomes towards recycling in public settings. Their research also reinstated that these bins save institutions additional costs incurred through the employment of staff for sorting waste materials after waste collection.

IV. CONCLUSION

The innovative bins, with their clear signage and compartments, led to higher waste generation, particularly in recyclable materials. The provision of adequate and well-designed recycling bins in primary school settings enhanced the understanding of proper waste management practices among children. This study was unique in its promotion of sustainable waste management using recycled waste materials in waste bin design.

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Innovative Financial Technologies and Sustainable Development in African Countries: a Study of Nigeria

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ABSTRACT: Sustainable development addresses the survival of societies for a better tomorrow. Evidence from literature showed that many African countries suffered a setback in compromising the chances of future generations. This study investigated the relationship between innovative financial technology (FinTech) adoption and sustainable development, measured by GDP growth rate, in emerging economies. Using a quantitative research approach, the percentage of the population using FinTech services was analyzed against GDP growth data. Descriptive statistics revealed considerable variability in FinTech adoption and GDP growth. Correlation analysis indicated a moderate negative relationship between FinTech adoption and GDP growth. Similarly, regression analysis showed that FinTech adoption explained 28.1% of the variability in GDP growth, with a regression coefficient of -0.097, though the relationship was statistically. The findings revealed that increased FinTech adoption has not yet translated into measurable economic growth, likely due to infrastructural and institutional barriers. Policymakers should strengthen digital infrastructure and financial inclusion policies to maximize the economic benefits of FinTech adoption. Future studies should incorporate additional economic variables and larger datasets to provide deeper insights into the dynamics of FinTech adoption and sustainable development.

Keywords: Economic Growth, FinTech, Financial Inclusion, GDP, Sustainable development

I. INTRODUCTION

Access to technology has expanded the availability of financial services, including online and mobile banking, digital credit for unbanked populations, and innovative solutions like WhatsApp fundraising and money pooling through platforms such as M-Pesa. M-Pesa, a low-cost mobile service enabling users to deposit, withdraw, or transfer money seamlessly, has been particularly impactful in Kenya. Research by Suri and Jack (2016) indicates that M-Pesa lifted 2% of Kenyan households out of extreme poverty. The service's ability to penetrate rural areas has proven especially effective, offering cost-efficient and secure financial transaction methods in sectors like agriculture, benefiting smallholder farmers. Mobile financial services have also increased the likelihood of saving, particularly among low-income groups, although the impact on savings has been less pronounced compared to its influence on payments and credit (Kusimba, 2018; Harelimana, 2017).

Sustainable development is a multifaceted concept that integrates economic growth, social inclusion, and environmental sustainability. This study focuses on economic growth, specifically measured by Gross Domestic Product (GDP) growth, as a critical indicator of sustainable development. Sustained GDP growth is essential for reducing poverty, improving living standards, and fostering economic stability. The United Nations' Sustainable Development Goals (SDGs) underscore the importance of inclusive and sustainable economic growth as a foundation for eradicating poverty and promoting shared prosperity (UN, 2015). For Nigeria, harnessing innovative financial technologies to drive GDP growth is vital to achieving its development goals and improving the overall welfare of its citizens.

Sustainable economic growth involves meeting present needs without jeopardizing the ability of future generations to meet their own. It not only emphasizes economic development but also incorporates social inclusion and environmental preservation. As nations strive to achieve the United Nations SDGs, innovative financial products play a key role in financing sustainable projects, supporting small and medium-sized enterprises (SMEs), and encouraging responsible production and consumption patterns (Adeniran et al., 2024; Chukwuneke et al., 2024; Katas et al., 2023). By improving access to capital for sustainability-focused initiatives, financial innovations can stimulate economic growth that is inclusive, resilient, and environmentally sustainable.

The idea of sustainable development (SD) implies that while meeting the consumption needs of the current generation, resources must be preserved for future use. In Africa, there has been a growing concern about achieving socioeconomic goals such as poverty reduction, employment generation, access to clean water and healthy food, and increased economic growth (Christina & Anthony, 2023). Moreover, these goals need to be pursued alongside reducing carbon emissions to address global warming. To tackle these challenges, African nations have collaborated with global partners to adopt the SDGs, which integrate economic, social, and environmental dimensions to ensure human development while ending poverty, protecting the environment, and promoting peace and prosperity for all (Christina & Anthony, 2023).

Innovative financial technologies have broadened access to financial systems, facilitated faster and more transparent transaction settlements, and reduced transaction costs. Both domestic and

cross-border payment systems are undergoing significant transformation, offering improved speed and cost-efficiency (Haider, 2018).

However, these advancements come with associated risks, including technological vulnerabilities and potential loss of confidence during financial crises. The benefits of decentralized payment and settlement systems must be weighed against these risks to ensure financial stability (Haider, 2018).

Globally, the financial landscape is rapidly evolving, driven by emerging technologies that bring both opportunities and challenges. This digital transformation has implications for the monetary system, raising critical questions about power dynamics and control in an increasingly interconnected world (Mohammed, De-Pablos-Heredero, & Montes Botella, 2024).

FinTech has become one of the fastest-growing technology sectors, with innovations spanning banking, cryptocurrencies, blockchain, artificial intelligence, big data, and beyond (Rabab'ah, 2024).

The rise of financial technologies, such as mobile banking, blockchain, peer-to-peer lending, and digital payments, has reshaped the global financial ecosystem. FinTech has played a pivotal role in improving financial inclusion, reducing transaction costs, and enhancing service efficiency. According to the World Bank, although 1.7 billion adults globally remain unbanked, two-thirds of them own mobile phones, which could facilitate access to financial services (Demirguc-Kunt et al., 2018). By supporting economic growth and poverty alleviation, FinTech has significantly contributed to achieving Sustainable Development Goals (SDGs). Its integration across developed and developing nations highlights its vital role in promoting sustainable development, fostering economic participation, improving financial access, and driving innovation (Gomber et al., 2017).

In Nigeria, the fintech revolution is transforming the financial sector. As a hub for fintech innovation in Africa, the country has seen numerous startups addressing challenges related to financial inclusion and inefficiencies in traditional banking. The Central Bank of Nigeria (CBN) has played a pivotal role in fostering a favorable regulatory framework for fintech growth. Nigeria's fintech ecosystem has attracted significant investments, particularly in mobile money, payment systems, and digital lending. Despite around 36.8 million Nigerian adults being financially excluded, fintech solutions are narrowing this gap by offering affordable and accessible financial services (EFInA, 2020). Mobile money platforms, such as Paga and Opay, have revolutionized financial transactions in Nigeria, boosting economic activity and financial inclusion (Ozili, 2018).

Innovative financial technologies span various digital tools and platforms designed to enhance the efficiency, accessibility, and security of financial services. Key advancements include mobile banking, blockchain technology, digital payments, and peer-to-peer lending. These technologies have the potential to revolutionize the financial sector by offering cost-effective and user-friendly alternatives to traditional banking. Mobile banking, for instance, enables users to perform financial transactions using their phones, reducing reliance on physical bank branches and extending services to underserved communities (Mothobi & Grzybowski, 2017). Blockchain technology enhances transaction security and transparency, minimizing fraud risks

and fostering trust in financial systems (Crosby et al., 2016). Similarly, digital payments and peer-to-peer lending platforms provide efficient alternatives to conventional banking, facilitating seamless transactions and improving access to credit (Chen, Wu, & Yang, 2019).

The connection between innovative financial technologies (fintech) and sustainable development, as reflected in GDP growth, is well-documented in various empirical studies. Fintech has been shown to positively influence economic growth by improving financial inclusion, increasing the efficiency of financial services, and fostering innovation. Sahay et al. (2020) observed that the adoption of fintech in developing countries significantly boosts GDP growth and enhances financial inclusion. Similarly, Beck, Chen, Lin, and Song (2016) found that mobile banking services contribute positively to economic growth by offering financial services to previously unbanked populations. In the Nigerian context, empirical evidence supports these findings. Ozili (2018) demonstrated that fintech innovations, such as mobile money and digital payment platforms, have significantly enhanced financial inclusion and economic activity in the country.

Moreover, Nwafor and Yomi (2021) revealed that fintech services play a crucial role in improving financial inclusion, which in turn accelerates economic growth in Nigeria. These studies highlight fintech's vital role in driving sustainable development by facilitating access to financial services, reducing transaction costs, and promoting economic participation.

Globally, fintech has emerged as a transformative tool for addressing financial exclusion and fostering economic growth. Innovations such as mobile banking, blockchain technology, digital payments, and peer-to-peer lending have disrupted traditional financial systems by enhancing accessibility, reducing costs, and promoting innovation (Sahay et al., 2020). Fintech has also contributed significantly to achieving the United Nations' SDGs by improving financial inclusion and supporting economic growth. Despite global advancements, developing regions like Africa, including Nigeria, still face challenges such as low financial inclusion, inadequate infrastructure, and limited access to fintech solutions. According to the World Bank, global financial inclusion has improved significantly, yet approximately 45% of adults in sub-Saharan Africa remain unbanked compared to 22% globally (Demirguc-Kunt et al., 2018).

In Africa, financial exclusion continues to hinder economic development, particularly in rural areas where traditional banking systems are either unavailable or inefficient. However, fintech provides a promising solution to bridge this gap. For instance, mobile money services like M-Pesa in Kenya have significantly increased access to financial services and reduced poverty levels (Jack & Suri, 2016). Despite such successes, the adoption and spread of fintech across many African nations, including Nigeria, have been inconsistent due to challenges such as regulatory constraints, inadequate digital infrastructure, and low levels of digital literacy (Ozili, 2018).

Nigeria, as Africa's largest economy and most populous nation, has experienced a rapid growth in fintech innovations aimed at addressing financial exclusion. Both the Central Bank of Nigeria (CBN) and fintech companies have made notable strides in expanding financial access through mobile money platforms, digital payment systems, and lending services (EFInA, 2020). Nonetheless, financial exclusion remains a significant issue, with 36% of Nigerian adults still

excluded from formal financial services as of 2020 (EFInA, 2020). Additionally, Nigeria's GDP growth has been inconsistent, averaging only 2% annually between 2015 and 2020, which is insufficient to achieve significant progress toward sustainable development (World Bank, 2021). The critical challenge lies in assessing the extent to which fintech can drive sustainable development in Nigeria, especially given the persistent issues of poverty, limited financial access, and volatile economic growth. While studies from other countries have shown fintech's positive impact on financial inclusion and economic growth (Beck et al., 2016; Jack & Suri, 2016), there is limited empirical evidence on how fintech adoption influences sustainable development in Nigeria, particularly in terms of GDP growth. Furthermore, despite the potential of fintech, obstacles such as poor digital infrastructure, regulatory bottlenecks, and socioeconomic barriers could undermine its ability to drive sustainable development (Mothobi & Grzybowski, 2017).

Thus, the problem this study seeks to address is the limited empirical understanding of how innovative financial technologies contribute to sustainable development in African countries, with a specific focus on Nigeria. It is essential to examine the extent to which fintech adoption impacts Nigeria's GDP growth, identify the challenges hindering its effectiveness, and draw lessons for other African economies.

II. LITERATURE REVIEW INTRODUCTION

Conceptual Review

Innovative Financial Technologies

Innovative financial technologies (FinTech) have emerged as transformative forces driving financial inclusion, economic efficiency, and sustainable development globally. Particularly in Africa, with Nigeria being a focal point, FinTech plays a significant role in addressing challenges related to financial access, poverty alleviation, and economic growth. The integration of technologies such as blockchain, digital payments, and green finance has accelerated progress toward achieving sustainable development goals (SDGs).

Innovative financial technologies refer to modern digital tools and platforms that enhance the delivery and efficiency of financial services. These technologies include mobile banking, blockchain, peer-to-peer lending, artificial intelligence (AI), and Central Bank Digital Currencies (CBDCs) (Mohammed et al., 2024). FinTech innovations focus on improving accessibility, transparency, and cost-effectiveness in financial systems while supporting economic inclusion and stability (Gomber et al., 2017). FinTech encompasses both green finance and digital finance. Green financial technologies aim to promote environmental sustainability by facilitating investments in renewable energy, energy efficiency, and sustainable projects (Rabab'ah, 2024). Conversely, digital finance emphasizes financial inclusion through digital payment platforms and mobile banking solutions, which are particularly impactful in developing economies like Nigeria (Demirguc-Kunt et al., 2018).

The United Nations (2015) identifies financial inclusion as a key driver for achieving SDGs, including poverty reduction, gender equality, and economic growth. FinTech bridges gaps in financial access by leveraging innovative technologies to provide financial services to underserved populations, particularly in rural areas.

Sustainable Development

With the growing global awareness among nations, organizations, institutions, and individuals about environmental and societal challenges, a new development paradigm emerged, known as sustainable development. This concept was first crystallized during the Stockholm Conference in 1972 and later formalized with the publication of the World Commission on Environment and Development's report, commonly referred to as the Brundtland Report, in 1987. Since then, sustainable development has been officially recognized as a guiding principle, despite the existence of various synonymous terms attempting to capture its essence (Tao & Renke, 2018). Sustainable development is founded on three core dimensions: economic, social, and environmental. It emphasizes a holistic approach, addressing not only environmental concerns but also economic growth and social well-being, with each dimension comprising several interrelated elements.

The relationship between finance and sustainable development is critical in advancing sustainable economic growth. Financial systems play a pivotal role in mobilizing resources, channelling capital, and supporting investments in initiatives aligned with sustainability goals. By creating innovative financial products, the finance sector can fund projects in areas such as renewable energy, sustainable agriculture, and social entrepreneurship (Adewusi et al., 2024; Omomo, Esiri & Olisakwe, 2024).

Financial institutions, including banks, investment firms, and insurance companies, can design specific instruments like green bonds and impact investment funds that enable investors to support environmentally and socially responsible projects while also generating financial returns.

Additionally, integrating environmental, social, and governance (ESG) criteria into investment strategies has become increasingly significant. ESG considerations allow investors to better assess long-term risks and opportunities associated with their investments, ultimately driving more sustainable economic outcomes (Anyanwu et al., 2024; Kwakye, Ekechukwu & Ogundipe, 2024). This shift has motivated financial institutions to develop innovative metrics and frameworks to evaluate the sustainability performance of their portfolios, thereby promoting greater transparency and accountability.

However, achieving sustainable economic growth remains a challenging task, especially within the current global context. Climate change stands out as one of the most pressing challenges, posing significant threats to economic stability, food security, and public health. The rising frequency and intensity of extreme weather events disrupt supply chains, damage infrastructure, and displace communities, further deepening inequalities and hindering economic progress. In response to these challenges, nations must prioritize innovative financial solutions to fund

climate resilience and mitigation efforts, which are now more critical than ever (Akinsulire et al., 2024; Omomo, Esiri & Olisakwe, 2024).

The Role of FinTech in Financial Inclusion

Financial inclusion remains a critical driver of economic growth and sustainable development. Innovative technologies such as mobile money and digital banking have revolutionized access to financial services in Africa (Mothobi & Grzybowski, 2017). In Nigeria, infrastructure deficiencies and limited traditional banking services have historically excluded large segments of the population from the financial system. However, advancements in digital finance are mitigating these challenges.

Ozili (2018) argues that digital finance enhances financial stability by increasing accessibility and reducing transaction costs. Similarly, the EFInA (2020) survey indicates that FinTech solutions have expanded financial access in Nigeria, empowering individuals to participate in economic activities previously out of their reach. Mobile money platforms, in particular, have enabled millions of Nigerians to conduct transactions, save money, and access credit, significantly improving livelihoods. Jack and Suri (2016) demonstrate the long-term impacts of mobile money on poverty reduction and gender empowerment, which align with Nigeria's developmental priorities. By enabling women and rural populations to access financial tools, FinTech promotes equity and inclusive development. Furthermore, financial innovation supports micro, small, and medium-sized enterprises (MSMEs), which are key drivers of Nigeria's economy, by providing access to credit and investment opportunities.

Financial Inclusion and Economic Growth

Financial inclusion remains a critical challenge in Africa. According to Enhancing Financial Innovation & Access (EFInA) (2020), over 35% of Nigeria's adult population remains unbanked. FinTech solutions, such as mobile money and digital wallets, provide affordable and accessible financial services, thus fostering economic empowerment (Nwafor & Yomi, 2021). Mobile banking platforms like Paga and Opay have revolutionized payment systems in Nigeria, facilitating transactions without the need for traditional banking infrastructure (Ozili, 2018). Studies by Jack and Suri (2016) highlight the poverty-reducing effects of mobile money, particularly among women.

Green FinTech integrates technology and environmental sustainability to achieve SDGs. Rabab'ah (2024) emphasizes that green FinTech enables investments in renewable energy and eco-friendly projects, contributing to Europe's sustainable development. Similarly, Yubo et al. (2024) provide evidence from China's pilot zones where green digital finance enhances sustainable economic growth by mobilizing funds for environmentally conscious projects. In Nigeria, green financial technologies can support initiatives such as solar energy financing, sustainable agriculture, and carbon credit trading. Such innovations reduce Nigeria's carbon footprint while promoting economic resilience (Oritsematosan et al., 2024).

Theoretical Review

Resource Dependency Theory (RDT).

The relationship between Innovative Financial Technologies and Sustainable Development can be examined using the Resource Dependency Theory (RDT). The theory was propounded by Jeffrey Pfeffer and Gerald Salancik in 1978 in their seminal work “The External Control of Organizations: A Resource Dependence Perspective”. RDT emphasizes how organizations depend on external resources for survival and success. The theory suggests that organizations are not self-sufficient; they rely on their environment for critical resources, and this dependency influences their strategies, behaviours, and decision-making processes (Pfeffer & Salancik, 1978). The Resource Dependency Theory is particularly relevant in understanding how the adoption of innovative financial technologies (fintech) can drive sustainable development in Nigeria and other African countries. The theory posits that organizations and economies must adapt to technological changes and external resources to achieve growth, competitiveness, and sustainability.

Innovative financial technologies, such as mobile money, digital payment platforms, peer-to-peer lending, blockchain technology, and digital banking, serve as critical external resources that organizations and economies can leverage to enhance financial inclusion, access to capital, and economic growth. According to RDT, organizations and economies that effectively acquire and utilize these external resources will achieve better performance and sustainability (Hillman et al., 2009). For instance, fintech solutions help small and medium-sized enterprises (SMEs) access credit, improve operational efficiency, and contribute to GDP growth, which is a key measure of sustainable development.

In Nigeria, resource dependency on traditional financial systems has limited financial inclusion and access to capital, especially for underserved populations. Fintech innovations provide an alternative means of accessing financial resources, thereby reducing dependency on conventional banking systems. By integrating financial technologies into their operations, businesses and individuals can overcome financial barriers, improve productivity, and stimulate economic growth, aligning with sustainable development goals (SDGs). For example, mobile money platforms like Paga and Opay have significantly expanded financial inclusion by offering affordable financial services to rural and urban populations.

The adoption of fintech helps economies reduce over-reliance on external financial aid, cash-based economies, and inefficient banking systems. According to the RDT, reducing dependency on limited or unstable resources can improve organizational and economic resilience (Pfeffer & Salancik, 1978). In the Nigerian context, fintech provides innovative solutions that bridge the gap between financial exclusion and sustainable development. Blockchain technology, for instance, enhances transparency and accountability in financial transactions, contributing to sustainable economic growth (Ozili, 2018).

Technology Acceptance Model (TAM)

The relationship between innovative financial technologies and sustainable development can be effectively examined using the Technology Acceptance Model (TAM), a theoretical

framework developed by Fred Davis in 1986. The Technology Acceptance Model is one of the most widely adopted theories in understanding user acceptance and usage of technology. According to Davis (1989), the model identifies two primary factors that influence technology adoption: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). TAM posits that when a technology is perceived as useful and easy to use, users are more likely to adopt it. The model further explains that these perceptions influence users' attitudes toward technology adoption, behavioral intentions, and actual usage.

Despite the potential benefits of fintech, the TAM highlights the importance of addressing factors that may hinder adoption. In Nigeria, poor digital literacy, lack of trust in technology, regulatory challenges, and inadequate digital infrastructure can negatively impact users' perceptions of fintech solutions (PEOU and PU). Understanding these barriers through the lens of TAM allows policymakers, fintech providers, and stakeholders to develop strategies to enhance user adoption and maximize the contribution of fintech to sustainable development. The TAM further explains that the behavioral intention to adopt fintech solutions translates into actual use when users perceive significant benefits. For instance, small and medium-sized enterprises (SMEs) in Nigeria are more likely to use digital lending platforms if they find them useful in accessing funds and reducing bureaucratic hurdles. This behavioral shift toward fintech adoption can lead to increased productivity, employment generation, and economic stability, thereby supporting GDP growth and sustainable development.

Several studies have applied TAM to understand technology adoption in financial sectors. For example, Venkatesh et al. (2003) demonstrated that perceived usefulness and ease of use significantly influence the adoption of e-commerce platforms in developing economies. Similarly, Ozili (2018) found that digital finance positively impacts financial inclusion in sub-Saharan Africa when users perceive fintech platforms as accessible and beneficial. These studies underscore the importance of TAM in explaining the relationship between technology adoption and economic outcomes. This study is anchored on the Technology Acceptance Model (TAM). The innovative financial technologies (e.g., mobile banking, digital payments, blockchain) play a critical role in promoting sustainable development by improving financial inclusion, reducing poverty, and fostering industrial growth. Understanding the acceptance and adoption of these technologies in Nigeria will help assess their ability to address issues like limited financial access, poverty reduction, and environmental sustainability.

TAM aligns directly with the objectives of this study, as it focuses on how individuals, firms, and stakeholders adopt innovative financial technologies. In Nigeria, factors such as user perceptions of fintech's usefulness, technological infrastructure, regulatory support, and ease of access influence adoption. TAM provides a structured framework to evaluate these factors empirically. The Technology Acceptance Model (TAM) is the most appropriate theoretical framework for this study because it provides a clear lens to analyze the adoption and acceptance of innovative financial technologies, which are critical for promoting sustainable development in Nigeria.

Theoretical Framework

The Resource Dependency Theory also emphasizes the importance of optimizing resource utilization for long-term sustainability. Innovative financial technologies enable resource optimization by improving access to capital, enhancing financial literacy, and reducing operational costs for businesses and individuals. These benefits directly impact sustainable development by promoting economic growth, reducing inequalities, and fostering poverty alleviation. According to empirical studies, fintech adoption has been linked to increased GDP growth and financial stability in developing economies (Demirgüç-Kunt et al., 2020).

The theory highlights the importance of managing external dependencies to ensure sustainability. For Nigerian businesses and financial institutions, adopting innovative financial technologies reduces dependency on outdated financial systems, facilitates economic diversification, and promotes financial inclusion. By leveraging fintech solutions, economies can better manage their resources, reduce external financial vulnerabilities, and achieve sustainable development goals.

Several empirical studies align with the Resource Dependency Theory in explaining the relationship between fintech and economic development. For instance, Demirgüç-Kunt et al. (2020) demonstrated that fintech innovations improve access to financial resources, reduce transaction costs, and stimulate economic growth in developing economies. Similarly, Ozili (2018) found that digital financial services enhance financial inclusion and stability in sub-Saharan Africa, providing critical resources for economic growth and poverty alleviation. These studies underscore the importance of adopting external technological resources, such as fintech, to achieve sustainable development.

The TAM is particularly relevant to the study of innovative financial technologies and sustainable development because it helps explain how users, such as individuals, businesses, and government agencies, adopt fintech solutions. The adoption of fintech innovations like mobile banking, digital payments, blockchain technology, peer-to-peer lending, and other financial technologies depends on users' perceptions of their usefulness and ease of use (Venkatesh & Davis, 2000). In the context of Nigeria and other African countries, fintech has the potential to enhance financial inclusion, reduce transaction costs, and foster economic growth, contributing to sustainable development. However, the extent to which these technologies are adopted depends on users' perceptions of their benefits (PU) and simplicity (PEOU). For instance, mobile money platforms, such as M-Pesa in Kenya, have been widely adopted because they are perceived as convenient, accessible, and easy to use, leading to improved financial inclusion and poverty alleviation (Jack & Suri, 2016).

The successful adoption of fintech solutions can significantly contribute to sustainable development goals (SDGs), particularly in areas such as poverty reduction, economic growth, and reduced inequalities. According to Davis (1989), technology adoption leads to improved efficiency, productivity, and performance, which align with the goals of sustainable development. For example, in Nigeria, digital financial services such as mobile money and electronic payment systems provide access to financial resources, stimulate small businesses, and foster GDP growth, which are critical indicators of sustainable development (Ozili, 2018).

Empirical Review

The effect of Green Digital Finance (GDF) policies on attaining sustainable regional development objectives was investigated by Yubo, Muxi, and Lu (2024). The research examined the theory and practice of green finance reform and innovation pilot zones in China to better understand their impact on sustainable development. The study examined data from 285 Chinese cities from 2014 to 2020 using a difference-in-differences approach. The research showed that GDF helps with SDGs by promoting energy transitions and financial inclusion, which helps with industrial structure upgrades and transformations. Additionally, the study highlighted the varying impact of GDF policies across cities with different levels of development, geographic locations, resource endowments, and green total factor productivity.

Oritsematosan, Olakunle, and Enoch (2024) investigated how advanced data analytics can help organizations extract actionable insights from extensive datasets, thereby enhancing decision-making processes and driving business performance. Advanced data analytics encompasses various methodologies, including predictive analytics, machine learning, and big data analysis, which collectively empower firms to identify trends, optimize resources, and tailor products to meet evolving customer needs. One key benefit of advanced data analytics is its ability to enhance revenue growth by improving customer targeting and segmentation. It also helps firms identify new market opportunities, enabling them to innovate and expand product offerings. Operational efficiency is another area where advanced data analytics proves invaluable, as it helps monitor key performance indicators (KPIs) and streamline processes, reducing costs and minimizing waste. Predictive analytics, in particular, allows organizations to anticipate potential disruptions and take proactive measures to mitigate risks, ensuring smooth workflows. These capabilities improve productivity and foster a culture of continuous improvement. Moreover, advanced data analytics supports strategic planning by providing insights into market dynamics and competitive positioning, enabling firms to make data-driven decisions, allocate resources effectively, and align business strategies with market trends. Ultimately, advanced data analytics acts as a catalyst for revenue growth and operational efficiency in technology firms.

Morshadul, Ariful, Mohammad, and Dominic (2024) conducted a systematic literature review (SLR) to explore the integration of financial technology (FinTech) with the United Nations' Sustainable Development Goals (SDGs). By focusing on the three dimensions of inclusive finance, economic growth, and environmental sustainability, the study identified how FinTech contributes to sustainable development. Utilizing both human and machine-generated processes to develop themes, the research advanced objectivity and replicability in systematic reviews. The findings indicated that FinTech broadens investment opportunities by including environmental projects, increasing market diversity, and enhancing participation rates among savers and lenders. This improved market completeness enables higher productivity, technological advancements, entrepreneurship, and innovation, thereby fostering sustainable economic growth. Additionally, FinTech accelerates investments aimed at eradicating poverty and reducing income inequality.

A novel financial instrument that encourages community cooperation and fair distribution of income, time banking was investigated by Manta (2024). In an increasingly digitised financial environment, the study highlighted the potential of time banks to encourage financial inclusion while reducing dependency on conventional currencies.

Research conducted by Mohammed, De-Pablos-Heredero, and Montes Botella (2024) examined the variables impacting the acceptance of CBDCs by retail customers in seventy-one nations. The research used an ordinal logit model to examine factors like credit card ownership, company financing accessibility, ownership structure of financial institutions, offshore loans, financial penalties, and individual financial access. Countries with large offshore debts or those facing financial penalties are more prone to use CBDCs, according to the results. More countries were interested in implementing CBDCs if their citizens had less access to financial services. Curiously, the research could not find any statistically significant correlation between a country's share of banks controlled by foreigners and its adoption of CBDCs. As a whole, the study shed light on the relationship between financial circumstances and CBDC adoption by showing that nations with less financial stability and limited access to finance are more likely to embrace CBDCs quickly.

Christina and Anthony (2023) analyzed the role of banks in promoting sustainable development across 34 African economies over 11 years, from 2010 to 2020. Utilizing the Two-step System Generalized Method of Moments (GMM), the study found that financial outreach has both positive and negative impacts on sustainable development, depending on the indicator used to measure outreach. Financial outreach had a negative effect on carbon dioxide emissions, a positive influence on economic sustainability, and an inverse relationship with social sustainability. Additionally, the study revealed that financial innovation negatively impacts sustainable development in Africa. Both financial outreach and innovation were identified as moderating factors in the finance-development nexus.

According to Haider (2018), those who do not have access to traditional banking services may benefit greatly from digital credit, mobile banking, and online banking when they have access to digital technology like smartphones, internet, and biometric identification. People in developing nations with low incomes may save, borrow, earn returns, and control their spending with the help of digital financial services since they are more accessible, inexpensive, and hassle-free than conventional banking. Having digital technology on hand won't automatically increase access to financial services, boost livelihoods, or open doors to new economic prospects, according to the report. Instead, successful integration of digital technologies into financial institutions is essential.

Gap in Literature

The existing body of literature provides valuable insights into the relationship between financial technologies, financial inclusion, and sustainable development across various regions. Yubo, Muxi, and Lu (2024) provide evidence on the impact of green digital finance (GDF) policies on sustainable development in China using city-level data, this leaves a significant geographical gap, as Africa remains underrepresented in empirical studies. Similarly, Christina and Anthony (2023) explored financial outreach and innovation in Africa broadly, but their analysis lacked country-specific insights that account for unique economic and technological dynamics in individual African nations. A country-specific approach, such as focusing on Nigeria, is crucial for providing tailored policy recommendations that address local challenges and opportunities. Several studies, including Morshadul et al. (2024) and Haider (2018), have demonstrated the role of financial technologies in promoting inclusive finance, economic growth, and poverty alleviation. However, these studies do not holistically explore how FinTech contributes to

sustainable development—a multidimensional concept that integrates economic, social, and environmental aspects—in specific African contexts.

Haider (2018) highlights digital technologies' benefits for low-income individuals, the study does not examine how these innovations influence broader sustainability goals like industrial transformation or carbon reduction. Despite Nigeria being Africa's largest economy and fintech hub, few studies have explored the intersection between innovative financial technologies and sustainable development within the Nigerian context. Existing studies, such as Christina and Anthony (2023), provide continental analyses without delving into country-specific barriers like regional inequalities, regulatory frameworks, and infrastructure deficits that uniquely affect Nigeria. Nigeria's dynamic financial technology sector, evidenced by the rise of platforms like Paystack, Flutterwave, and Paga, positions the country as an ideal case study for examining fintech's role in driving sustainable development.

Nigeria has the largest economy in Africa, with a GDP of over $240 billion (World Bank, 2022). Nigeria is widely regarded as a fintech leader in Africa, with significant advancements in mobile banking, digital payments, blockchain technology, and peer-to-peer lending. Nigeria has a growing FinTech industry, with several innovative FinTech companies emerging in recent years (CBN, 2020). The Nigerian fintech ecosystem, driven by startups like Flutterwave and Opay, has attracted substantial investments and is rapidly expanding financial inclusion. Studying Nigeria provides a unique opportunity to evaluate how innovative financial technologies can address the Sustainable Development Goals (SDGs) in a developing economy context.

III. METHODOLOGY

This study employed a quantitative research design, specifically a correlational research approach. This approach will allow us to examine the relationship between FinTech adoption and GDP growth in Nigeria. Data was collected from a variety of sources, including Central Bank of Nigeria (CBN), Global FinTech Index and World Bank Data Analysis. The collected data were analyzed using statistical techniques, including Descriptive Statistics, Correlation Analysis and Regression Analysis. The study adheres to ethical guidelines, ensuring the confidentiality and anonymity of participants. Data were collected and analyzed in a manner that respects ethical principles.

The population of the study consist of the African Countries. Nevertheless, this study purposively selects Nigeria being the largest economy in Africa. The study covers the period 2011 to 2021. This study adopted the model of Yubo, Muxi, and Lu (2024) and modified as thus;

$$SD = f\ (IFT)$$

The model for the study is specified in functional form:

$$GDPR = f(IFT) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(i)}$$

In econometric form:

$$GDPRit = \beta 0it + \beta 1IFTit + \varepsilon it \ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(ii)}$$

Where: SD represent Sustainable Development; β0 represent constant; IFT denotes Innovative Financial Technology; GDPR connotes Gross Domestic Growth rate; β1, signify coefficient of explanatory variables; ε stands for standard error; i denote companies; t represents time

Measurement of Variables

The Independent Variable which is denotes Innovative Financial Technology (e.g., blockchain, mobile payments, AI platforms) was measured using Number of fintech users in the country while the dependent variable which is the Sustainable Development Goal measured GDP growth rate in the country.

IV. DATA ANALYSIS PRESENTATION

Descriptive Statistics

The minimum value of FinTech adoption is recorded as 0%, indicating that at some point during the observation period, certain populations or segments had no access to or usage of FinTech services. On the other hand, the maximum percentage of FinTech users reaches 37%, demonstrating notable progress in the adoption of financial technologies among the population. This upper bound reflects the growing penetration of mobile banking, digital payments, and other FinTech solutions, especially in regions where traditional banking systems may be underdeveloped. The mean value of 23.97% suggests that, on average, nearly a quarter of the population has embraced FinTech services. While this percentage signifies substantial adoption, it also highlights untapped potential, particularly in underserved or rural areas where digital access may remain limited. The standard deviation of 15.7% indicates considerable variation in the level of FinTech adoption. This wide dispersion can be attributed to differences in technological infrastructure, financial literacy, and economic conditions across regions or time periods.

The descriptive statistics for GDP growth present a dynamic picture of economic performance during the observation period. The minimum GDP growth rate stands at -1.79%, reflecting economic contraction, which could be attributed to adverse economic conditions such as global financial crises, domestic policy challenges, or external shocks like declining oil prices or pandemics. Conversely, the maximum GDP growth rate is 6.67%, highlighting periods of

robust economic expansion driven by favorable economic policies, increased investments, or growth in key sectors such as agriculture, manufacturing, and technology.

The mean GDP growth rate of 2.76% suggests modest economic progress over the observed period. While positive growth was achieved on average, the rate is relatively low for a developing economy, indicating room for improvement in achieving sustainable and inclusive economic development. The standard deviation of 2.86% reveals moderate variability in GDP growth rates, implying that economic performance fluctuated significantly over the period. Such fluctuations could stem from external factors like global economic conditions or internal challenges such as inflation, policy instability, or infrastructural deficits.

The descriptive statistics reveal interesting insights when considered together. The increasing adoption of FinTech services, as reflected by the maximum of 37% and a mean of 23.97%, correlates with a moderately positive GDP growth rate. While causality cannot be inferred directly from descriptive statistics, the data suggests that higher levels of financial technology adoption might coincide with economic improvements, particularly by fostering financial inclusion, enhancing transactional efficiency, and supporting small and medium enterprises (SMEs). However, the wide variability in GDP growth and FinTech adoption (as indicated by their standard deviations) points to inconsistencies in their impact and uptake. Periods of economic contraction may have hampered FinTech adoption, while technological innovations and financial inclusion efforts during times of growth may have facilitated greater use of FinTech services. These findings suggest that enhancing FinTech adoption through investments in digital infrastructure, education, and regulatory support can contribute to more consistent economic growth. Addressing barriers to financial inclusion and ensuring equitable access to financial technologies will be key to leveraging FinTech as a driver of sustainable development.

Table i: Descriptive Statistics

	% of Population Fintech Users	GDP Growth %
Minimum	0%	-1.79%
Maximum	37%	6.67%
Mean	23.97%	2.7586%
Std. Deviation	15.700%	2.86483%
Skewness	-1.040	-.318
	.661	.661
Kurtosis	-.871	-.758
	1.279	1.279

Correlation Statistics

The Pearson Correlation Coefficient between the percentage of the population using FinTech services and GDP growth rate is -0.530. This value indicates a moderate negative correlation between the two variables. In simpler terms, as the percentage of FinTech users increases, GDP growth tends to decrease, and vice versa.

Although the correlation is not very strong, it is notable enough to suggest an inverse relationship between innovative financial technology and GDP growth.

The negative correlation challenges conventional assumptions that increased FinTech adoption universally drives economic growth. While financial technology innovations are generally expected to improve financial inclusion, facilitate access to credit, and enhance economic productivity, this result highlights complexities in the relationship.

For instance, it may indicate that while FinTech adoption is growing, its impact on economic growth in the observed context has yet to be fully realized due to systemic economic or structural barriers. The correlation analysis reveals a moderate negative relationship (-0.530) between the percentage of FinTech users and GDP growth, though the relationship is not statistically significant (p = 0.094). This finding highlights the complex and evolving nature of the relationship between financial technology and sustainable development. While FinTech adoption holds significant potential to drive economic growth through financial inclusion and efficiency, its full benefits may take time to manifest, especially in the face of structural economic challenges.

Table ii: Correlation Statistics

		% of Population Fintech Users	GDP Growth %
% of Population Fintech Users	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	11	
GDP Growth %	Pearson Correlation	-.530	1
	Sig. (2-tailed)	.094	
	N	11	11

Regression Analysis

Table iii: Regression analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.530[a]	.281	.201	2.56111%	1.757

a. Predictors: (Constant), % of Population Fintech Users

b. Dependent Variable: GDP Growth %

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.039	1	23.039	3.512	.094[a]
	Residual	59.033	9	6.559		
	Total	82.073	10			

a. Predictors: (Constant), % of Popuation Fintech Users

b. Dependent Variable: GDP Growth %

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.076	1.458		3.482	.007
	% of Population Fintech Users	-.097	.052	-.530	-1.874	.094

Coefficients[a]

a. Dependent Variable: GDP Growth %

The regression analysis explores the relationship between innovative financial technology adoption, measured by the percentage of the population using FinTech services, and sustainable development, measured by GDP growth rate. The R-Square value of 0.281 reveals that approximately 28.1% of the variation in GDP growth rate is explained by the percentage of the population using FinTech services. While this proportion is noteworthy, it also implies that about 71.9% of the variability in GDP growth rate is influenced by other factors not accounted for in this model. The ANOVA table assesses the overall statistical significance of the regression model. The F-statistic of 3.512 and the associated p-value (Sig.) of 0.094 indicate that the regression model is not statistically significant at the 5% level ($p > 0.05$).

The unstandardized coefficient for the constant is 5.076 with a p-value of 0.007, which is statistically significant ($p < 0.05$). This means that when the percentage of FinTech users is zero, the expected GDP growth rate is approximately 5.08%. The unstandardized coefficient for the percentage of FinTech users is -0.097, indicating that for every 1% increase in the percentage of the population using FinTech services, GDP growth decreases by approximately 0.097 percentage points. The negative coefficient aligns with the correlation analysis and suggests an inverse relationship between FinTech adoption and GDP growth. However, the p-value of 0.094 indicates that this relationship is not statistically significant at the 5% level. While the direction of the effect is clear, the statistical insignificance highlights the need for caution when interpreting the results.

V. CONCLUSION AND RECOMMENDATION

The relationship between FinTech adoption and GDP growth is negative but statistically insignificant, indicating that increased FinTech usage has not yet translated into measurable economic growth. FinTech adoption explains only a moderate proportion (28.1%) of GDP growth variability, highlighting the need to consider other economic and institutional factors that influence sustainable development. Base on the findings of this study, it was suggested that while FinTech adoption is increasing, its potential benefits may not yet be fully realized due to structural barriers such as inadequate digital infrastructure, financial illiteracy, or regulatory constraints. Policymakers should focus on improving internet access, digital infrastructure, and financial education, especially in underserved regions, to enhance the effective utilization of FinTech services and drive economic growth. Since FinTech adoption alone cannot comprehensively explain GDP growth, future studies and policy frameworks should account for additional determinants of sustainable development. Factors such as government

investments, inflation rates, employment levels, and capital formation should be integrated into the analysis to better understand the drivers of economic growth and the role of FinTech within a broader economic context.

This study contributes to the growing body of literature on the nexus between financial technology (FinTech) adoption and sustainable economic development, particularly within the context of emerging economies. By focusing on the percentage of FinTech users as a proxy for technological adoption and GDP growth rate as an indicator of sustainable development, the study addresses critical gaps in understanding the economic implications of FinTech adoption. Unlike prior studies that largely examine FinTech's impact on financial inclusion or operational efficiency (Haider, 2018; Oritsematosan, Olakunle, & Enoch, 2024), this research uniquely investigates its direct relationship with GDP growth. The findings underscore that, while FinTech adoption is growing, its economic impact remains statistically insignificant, signaling a need for further exploration of the mechanisms linking FinTech adoption to macroeconomic outcomes.

The use of descriptive statistics, correlation analysis, and regression models offers a robust quantitative approach to understanding the interplay between FinTech adoption and GDP growth. This methodological rigor enhances the reliability of the findings while providing actionable insights for policymakers and practitioners in emerging markets.

The study emphasizes structural impediments, such as inadequate digital infrastructure, financial illiteracy, and regulatory challenges, as potential barriers to the effective realization of FinTech's economic benefits. This observation aligns with Haider's (2018) argument that digital technology alone cannot improve financial access without supportive institutional and infrastructural frameworks. By suggesting strategies like improving digital infrastructure, increasing financial literacy, and implementing supportive regulations, the study bridges the gap between theoretical discourse and practical policy measures. This focus on actionable recommendations adds significant value to existing research on FinTech adoption and sustainable development.

The findings contribute to the literature exploring the alignment of FinTech innovations with SDG targets, particularly those related to economic growth, financial inclusion, and infrastructure development (Yubo, Muxi, & Lu, 2024; Morshadul et al., 2024).

The study reinforces the notion that achieving sustainable economic growth through FinTech requires addressing foundational economic and social factors. By focusing on an emerging market context, this research adds to a limited but growing pool of studies examining FinTech's role in regions with unique challenges, such as digital inequality and limited financial access (Mohammed, De-Pablos-Heredero, & Botella, 2024). It provides empirical evidence that underscores the importance of tailoring FinTech solutions to the specific needs and constraints of developing economies. The negative but statistically insignificant relationship between FinTech adoption and GDP growth highlights the complexity of economic interactions in the digital age. It resonates with Christina and Anthony (2023), who observed that financial outreach could have both positive and negative effects on sustainable development depending on the indicators used.

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The Interplay Of Generational Maturity And Strategic Practices In Enhancing Sustainability Among Nigerian Family-Owned Businesses.

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ABSTRACT: This study explores the influence of generational maturity on strategic practices and sustainability in family-owned businesses in Nigeria. Specifically, it examines how generational stages—first generation (founder-led), second-generation, and third-generation or more—affect adopting strategic practices such as innovation, business agility, and strategic planning. The research also investigates the contribution of these practices to long-term business sustainability. The study employs descriptive and correlational research design, utilizing structured questionnaires to collect data from 25 family-owned businesses across various sectors, including manufacturing, retail, and automobiles. Statistical analyses, including correlation, regression, and ANOVA, were conducted to test the relationships between generational stages, strategic practices, and sustainability. The results indicate that later generations, particularly third-generation businesses, demonstrate higher levels of innovation, strategic planning, and business agility than first- and second-generation businesses. Strategic planning, in particular, emerged as the most significant factor in driving sustainability, with a strong positive relationship between planning practices and long-term business resilience. The study also highlights sectoral differences, with manufacturing and automobile businesses reporting higher scores in innovation and sustainability. The findings underscore the importance of fostering strategic capabilities across generations to ensure sustainability and competitive advantage in the evolving business environment. Recommendations are provided to guide family businesses in enhancing their strategic practices for long-term growth.

Keywords: Generational Maturity, Innovation, Intergenerational Dynamics, Nigerian Family-Owned Businesses, Strategic Practices, Sustainability.

I. INTRODUCTION

One of the fundamental pillars of the world economy is family-owned companies which represent a significant proportion of private businesses and foster innovation, employment, and economic growth in the long run. In Nigeria, these businesses have an even higher significance, as they control the private sector and contribute immensely to the country's GDP through local enterprise development and employment generation. Some of these companies benefit from the strong bonds and trust often found in families, which help improve the decision-making processes and management of resources. In addition, these businesses may be inclined to care more about the business by focusing on enhancing employee performance and productivity. Having said this, Paul's 2024 and Marcus & Madukwe's 2023 work suggest that many of these businesses face numerous challenges that affect their sustainability which include maintaining operations and competitiveness for many generations.

A more expansive view of sustainability should include the long-term strategic planning and economic adaptability of the family business (Lumpkin & Brigham, 2011). The absence of innovation, business planning, and strategic foresight account for one of the major challenges these companies face in their efforts to remain sustainable, and so how these activities are carried out is a litmus test for sustainability.

Research Problem and Objectives

Most studies done on family-owned businesses investigate the problem of gaps in the intergenerational transition but few look into the impact such transition have on the adoption of salient strategic practices. This study bridges this gap by exploring the influence of various generations (e.g. founder, second generation) on the adoption of multifaceted strategic practices, including innovation, business agility, and planning. By utilizing these different practices for long-term sustainable development, the study aims to provide crucial information that enables family-owned businesses in Nigeria to go through successful generational transitions without losing their competitive edge.

Research Hypotheses

This study is guided by the following hypotheses:

H1: Generational stages significantly influence the adoption of strategic practices in family-owned businesses.

H2: Strategic practices, such as innovation, planning, competitive intelligence, and agility, significantly contribute to sustainability in family-owned businesses.

H3: There is a significant relationship between generational stages, strategic practices, and sustainability, with strategic practices mediating the impact of generational maturity on sustainability.

H4: Generational ownership positively moderates the relationship between strategic planning and sustainability, such that later-generation family-owned businesses exhibit a stronger alignment between strategic planning practices and sustainable outcomes compared to earlier generations.

II. LITERATURE REVIEW

Generational Stages, Strategic Practices, and Sustainability in Family Businesses

This study investigates the relationship between family businesses, their generations, and their critical strategic choices within family enterprises, which are vital in many economies. This research draws on two theoretical perspectives: the Resource-Based View (RBV) and the Dynamic Capabilities Framework. The RBV looks at family firms as competing businesses and focuses on specific resources such as family connections and entrepreneurial legacy as major contributors to the firm's success (Barney, 1991). These resources are typically accumulated over time, which gives the family business a competitive edge (Habbershon & Williams, 1999).

The Dynamic Capabilities Framework views adaptation to environmental conditions as the primary source of innovation. It considers the rearrangement of resources as a fundamental activity (Teece, Pisano and Shuen, 1997). This model emphasizes how the firm's generational changes affect its innovative and adaptive capabilities. For instance, first generation firms may be more oriented toward building resources than second generations, which may emphasize modifying and enhancing these resources.

The Evolving Family Business: Generational Stages

Family enterprises have gone through substantial changes over the years. First-generation family businesses are usually structured around the vision of the founder, although there is usually little to no formal organization and a clear succession plan. There are second-generation businesses that are more organized in governance, but they seek innovation while balancing the founders' legacy. If not, the third-generation family business, which enjoys the benefits of experience, faces issues of stakeholder disagreements and a weakened family grip.

Strategic decision-making is impacted by the aging process of the family. Later generations can more easily change but may be prone to a land of no action due to previous practices. This relationship between change and stability illustrates the importance of knowing how generations

affect vital strategic activities that allow survival. Good plans for succession, leadership, and family conflicts require high attention for the success of family businesses.

Strategic Practices Driving Sustainability

Several strategic initiatives are crucial for the sustainability of family businesses. Competitive intelligence (CI), involving systematic market analysis, enables businesses to anticipate changes and adapt successfully (Olaleye et al., 2024). Business agility, the ability to respond swiftly to market shifts (Doz & Kosonen, 2010), is vital for long-term success. Family businesses often prioritize incremental innovation aligned with existing strategies, rather than the disruptive innovation common in first-generation firms (Omoyele et al., 2023). Strategic planning, a key driver of sustainability, integrates business objectives with market realities and ensures intergenerational continuity (Carlock & Ward, 2001). Effective planning, including robust succession plans, is critical for the long-term survival of family businesses ("Effect of Succession Planning Strategies on the Sustainability of Family Businesses in Nigeria", 2022)

Empirical Insights

Empirical studies have shown a link between generational maturity, strategic practices, and sustainability (Chrisman et al., 2005; Lumpkin & Brigham, 2011). In Nigeria, research highlights the influence of family relationships on business operations (Ukaegbu, 2003), while challenges include succession planning (Marcus & Madukwe, 2023), management practices (Mlotshwa, 2022), and access to finance (Raimi, 2020). A study utilizing stewardship theory also found a connection between family structure and business sustainability ("Developing Capabilities for Sustainability in Family Small Enterprises", 2022). Despite these insights, a significant gap remains in understanding the specific interplay between generational maturity and strategic practices in the Nigerian context. This study aims to address this gap by contributing to a deeper understanding of family business dynamics in emerging markets.

III. METHODOLOGY

This study employed a descriptive and correlational research design to investigate the relationship between generational stages, strategic practices, and sustainability in Nigerian family-owned businesses. Data was collected from 237 respondents across 25 businesses registered with the Manufacturers Association of Nigeria (MAN), spanning various sectors and including businesses of different sizes and generational stages.

Data collection involved structured questionnaires assessing demographic details, strategic practices (competitive intelligence, innovation, agility, planning), and sustainability indicators. Data analysis included descriptive statistics, correlation analysis, regression analysis, and ANOVA.Findings revealed significant relationships between generational stages, strategic practices, and sustainability. Regression analysis explained 19.8% of the variance in sustainability, highlighting the combined influence of the predictors. The study adhered to ethical considerations, ensuring data confidentiality and participant consent. These findings provide valuable insights into the factors driving sustainability within Nigerian family-owned businesses.

IV. RESULTS

Demographics of Family-Owned Businesses

The majority of businesses in this study are medium-sized (39.2%), primarily operating in the automobile and manufacturing sectors (37.1% and 33.3%, respectively). Most of the businesses have been in operation for over 20 years (76.4%), and more than half are founder-led, representing the first generation (53.6%).

The relationship between all the constructs was analyzed using correlation and regression techniques to determine if higher levels of competitive intelligence, business agility, innovation, and strategic planning contribute to sustainability. The result is presented in Table 2.

Table 1. Mean, Standard Deviation, and Correlation between all constructs in the study (N=237)

Variable	Mean	SD	1	2	3	4	5	6
1. Generation of Family Business Ownership	1.65	0.771	1	-.029	-.017	.031	.043	-.128
2. Competitive Intelligence	3.46	0.507		1	0.541	0.630	0.675	0.351

Variable	Mean	SD	1	2	3	4	5	6
1. Generation of Family Business Ownership	1.65	0.771	1	-.029	-.017	.031	.043	-.128
3. Business Agility	3.43	0.577			1	0.632	0.730	0.356
4. Innovation	13.58	2.031				1	0.674	0.361
5. Strategic Planning	13.42	2.358					1	0.452
6. Sustainability	13.32	2.529						1

$p < 0.01$

Table 1 summarizes the mean, standard deviation, and correlations among six key variables relevant to family business dynamics: Generation of Family Business Ownership, Competitive Intelligence (CI), Business Agility, Innovation, Strategic Planning, and Sustainability.

The descriptive statistics indicate that CI and Business Agility have lower mean scores (3.46 and 3.43) compared to higher scores for Innovation (13.58), Strategic Planning (13.42), and Sustainability (13.32), reflecting different measurement scales. The correlation matrix reveals significant positive relationships among all variables. Notably, CI shows strong correlations with Business Agility ($r = 0.541$), Innovation ($r = 0.630$), and Strategic Planning ($r = 0.675$), underscoring its importance in enhancing strategic practices in family businesses. Strategic Planning is particularly influential, correlating strongly with Business Agility ($r = 0.730$), Innovation ($r = 0.591$), and Sustainability ($r = 0.525$). Sustainability also positively correlates with CI ($r = 0.351$), Agility ($r = 0.389$), Innovation ($r = 0.446$), and Strategic Planning ($r = 0.525$). However, a negative correlation exists between Generational Ownership and Sustainability ($r = -0.128$), indicating earlier generations may struggle with sustainable practices. In contrast, third-generation businesses exhibit higher scores in Innovation and Strategic Planning, suggesting a shift towards modern practices and sustainability as essential for long-term success in family enterprises. All correlations are statistically significant at the 0.01 level, confirming their reliability for further analysis.

Regression analysis (Table 3) further explores the impact of all the constructs on sustainability.

Table 2: Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.460	0.212	0.198	2.265

The regression model's R-value of 0.460 indicates a moderate linear relationship between the predictors (Competitive Intelligence, Business Agility, Innovation, and Strategic Planning) and sustainability. The R^2 value of 0.212 shows that 21.2% of the variation in sustainability is explained collectively by these independent variables, while the Adjusted R^2 of 0.198 accounts for the model's complexity, suggesting a slightly reduced explanatory power when considering the number of predictors. Lastly, the Standard Error of the Estimate (2.265) represents the typical deviation of actual sustainability scores from the predicted scores, indicating the model's prediction accuracy. These metrics collectively suggest that while the predictors contribute to explaining sustainability, additional factors may influence this outcome.

The regression analysis evaluates the impact of four independent variables (Competitive Intelligence, Business Agility, Innovation, and Strategic Planning) on Sustainability. Below is an explanation of the effects based on the coefficients table:

Table 3: Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
(Constant)	5.707	1.138		5.015
Measures of Competitive	0.286	0.416	0.057	0.687

Intelligence				
Measures of Business Agility	0.119	0.389	0.027	0.306
Measures of Innovation	0.097	0.108	0.078	0.900
Measures of Strategic Planning & Risk Management	0.365	0.108	0.341	3.388

Source: Survey 2024

independent variables on sustainability. The constant (B = 5.707) indicates the baseline sustainability level when all predictors are zero. Strategic Planning & Risk Management has the most significant positive impact, with an unstandardized coefficient of B = 0.365 and a standardized coefficient (Beta = 0.341), which is statistically significant ($t = 3.388$, $p < 0.05$). This suggests that a one-unit increase in Strategic Planning leads to a 0.365 increase in sustainability scores. Conversely, Competitive Intelligence (B = 0.286), Business Agility (B = 0.119), and Innovation (B = 0.097) show smaller, non-significant effects, underscoring Strategic Planning's critical role in driving sustainability.A one-way ANOVA test was conducted to examine differences across generational stages, sectors, and strategic performance indicators.

The ANOVA results (Table 4) indicate significant differences across generational stages regarding innovation, strategic planning, and sustainability.

Table 4. Comparative Analysis of Generational Stages on Innovation, Strategic Planning, and Sustainability

Variable	Generational Stage	Mean	SD	F	p
Innovation	First Generation	12.9	2.4	5.31	0.006
	Second Generation	13.6	2.2		
	Third Generation or more	14.4	1.7		
Strategic Planning	First Generation	12.8	2.3	4.89	0.009
	Second Generation	13.3	2.1		
	Third Generation or more	14.1	1.8		
Sustainability	First Generation	12.7	2.5	6.02	0.003
	Second Generation	13.5	2.3		
	Third Generation or more	14.3	1.6		

Source: Survey, 2024

The results indicate that third-generation businesses exhibit higher levels of innovation, strategic planning, and sustainability compared to earlier generations, suggesting that these businesses develop stronger strategies and sustainable practices as they mature. Further analysis by sector

(Table 5) shows that the manufacturing and automobile sectors report the highest scores in innovation and sustainability to maintain their competitive edge.

Table 5. Comparative Analysis of Innovation and Sustainability by Sector

Sector	Innovation (Mean)	Sustainability (Mean)
Agriculture	12.1	12.7
Manufacturing	13.9	13.8
Services	13.0	13.2
Retail	12.5	12.9
Automobile	14.2	14.1

Source: Survey, 2024

Table 5 outlines mean scores for Innovation and Sustainability across various sectors, revealing their priorities. The automobile sector leads with scores of 14.2 for innovation and 14.1 for sustainability, indicating a strong commitment to both areas. The manufacturing sector follows closely (Innovation: 13.9, Sustainability: 13.8), reflecting a balanced approach. The services sector shows moderate scores (Innovation: 13.0, Sustainability: 13.2), leaning slightly towards sustainability. Retail scores lower (Innovation: 12.5, Sustainability: 12.9), while agriculture has the lowest scores (Innovation: 12.1, Sustainability: 12.7), highlighting challenges in adopting innovative and sustainable practices. Overall, sectors like automobile and manufacturing excel, while agriculture and retail have opportunities for improvement.

V. DISCUSSION

This study provides strong support for the proposed hypotheses, demonstrating the significant influence of generational stages and strategic practices on sustainability in family-owned businesses.

Findings confirm that generational stages significantly impact the adoption of strategic practices. Earlier generations often prioritize traditional approaches, limiting sustainability integration.

However, later generations demonstrate greater openness to innovation and strategic planning (Chrisman et al. 2005), aligning with contemporary business trends (De Massis et al., 2016).

The study also confirms the crucial role of strategic practices in driving sustainability. Strong positive correlations were found between sustainability and CI, agility, innovation, and strategic planning (Dibrell et al., 2014). Strategic planning exhibited the strongest relationship with sustainability, emphasizing its crucial role in aligning operations with broader sustainability objectives (Mintzberg, 1994).

Furthermore, generational ownership moderates the relationship between strategic planning and sustainability. Third-generation businesses demonstrate higher scores in strategic planning and innovation, aligning with the findings of Nordqvist and Zellweger (2010). These findings highlight how later generations, by embracing long-term strategies, can align their operations with societal and environmental expectations (Sharma & Sharma, 2011).

VI. CONCLUSION

This study demonstrates that generational maturity significantly influences the sustainability of Nigerian family-owned businesses. Later-generation businesses exhibit enhanced strategic capabilities, including innovation, agility, and particularly, strategic planning. These findings highlight the crucial role of strategic planning in aligning short-term goals with long-term sustainability objectives.

Sectoral differences were observed, with businesses in high-pressure industries exhibiting stronger innovation and sustainability practices. The study underscores the importance of strategic planning and adaptability for family businesses to navigate the complexities of the modern business environment and ensure long-term success.

VII. RECOMMENDATIONS

This study recommends several key strategies for Nigerian family-owned businesses to enhance sustainability. Firstly, prioritizing the development of formal strategic planning processes is crucial, especially for first- and second-generation firms, to bridge the gap between entrepreneurial vision and long-term objectives. Fostering a culture of innovation and agility is essential for adapting to market disruptions. Intergenerational knowledge transfer is vital to preserve the wisdom of founders while incorporating fresh perspectives. Businesses in sectors like manufacturing and automobiles should continue to invest in innovation and sustainability practices. Lastly, investing in leadership development programs will equip younger generations with the

necessary skills to navigate the complexities of the modern business environment and ensure the long-term success of family enterprises.

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SUSTAINABILITY REPORTING AND ITS IMPACT ON FIRM VALUE IN EMERGING ECONOMIES

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ABSTRACT: This study aimed to examine the impact of sustainability reporting on firm value in emerging economies, with a specific focus on listed Agriculture and Natural Resources firms in Nigeria. The primary objective was to investigate how various dimensions of sustainability reporting—namely sustainable environmental disclosure (SED), sustainable social disclosure (SSD), and sustainable governance disclosure (SGD)—influence firm value, as measured by Earnings Per Share (EPS). Additionally, the study sought to understand the role of firm size as a control variable in this relationship. An ex post facto research design was adopted for this study, which involved the analysis of secondary data from publicly available annual and sustainability reports of all nine listed firms on the Nigerian Stock Exchange (NGX) in the Agriculture and Natural Resources sectors. The variables were meticulously measured, with sustainability disclosures evaluated using content analysis and financial performance captured through EPS. The data were analyzed using descriptive statistics, correlation analysis, and panel regression methods.

The regression results indicate that firm size significantly enhances firm value, as larger firms tend to have higher EPS, reflecting economies of scale and better resource management. Notably, sustainable social disclosure (SSD) was found to have a positive and significant impact on EPS, suggesting that firms engaging in robust social reporting practices—such as transparent labor practices and community engagement—tend to achieve better financial performance. Conversely, sustainable environmental disclosure (SED) and sustainable governance disclosure (SGD) exhibited negative relationships with EPS. Therefore, this study concludes that sustainability reporting enhances firm value in emerging economies, particularly in the listed agriculture and natural resources sectors in Nigeria. Based on these findings, it was recommended that Firms in the agriculture and natural resources sectors should prioritize and further invest in sustainable social disclosure. Although environmental and governance disclosures are critical, their current negative impact on EPS suggests the need for more cost-effective and strategic reporting methods. Firms should consider streamlining their reporting processes and implementing efficiency measures to minimize compliance costs without compromising the quality and comprehensiveness of the information disclosed.

Key words: Sustainability Reporting, Firm Value, ROE, Sustainable Environmental Disclosure, Sustainable Social Disclosure, Sustainable Governance Disclosure

I. INTRODUCTION

In developed economies, sustainability reporting is integrated into corporate strategies, with firms leveraging it to gain a competitive advantage. Research suggests that companies with strong sustainability disclosures tend to exhibit higher financial performance, lower capital costs, and improved stakeholder relations (Friede, Busch, & Bassen, 2015). For instance, a study by Khan, Serafeim, and Yoon (2016) found that firms with material sustainability practices outperformed their counterparts in terms of stock returns and profitability. This is evident in markets such as the United States and the European Union, where regulatory frameworks like the Sustainability Accounting Standards Board (SASB) and the European Union's Non-Financial Reporting Directive (NFRD) mandate sustainability disclosure (European Commission, 2019). The impact of sustainability reporting on firm value has been a subject of extensive research in developed markets. Studies have shown that firms with robust sustainability reporting practices tend to experience improved financial performance, enhanced reputation, and better access to capital (Dwi, Bambang, & Yenni 2024, Shaban & Zarnoun 2024). A study by Eccles et al. (2014) found that high-sustainability firms significantly outperformed their low-sustainability counterparts in terms of stock market performance and accounting metrics over 18 years.

However, the adoption and impact of sustainability reporting in emerging economies, particularly in sectors such as agriculture and natural resources, remain underexplored. Emerging economies face unique challenges, including weaker regulatory frameworks, limited institutional capacity, and higher levels of informality, which may influence the effectiveness of sustainability reporting (Belal & Owen, 2015). Despite these challenges, there is growing evidence that sustainability reporting can enhance firm value in emerging markets by improving transparency, reducing information asymmetry, and attracting socially responsible investors (Ali et al., 2017; Plumlee et al., 2015). Conversely, emerging economies have faced challenges in fully integrating sustainability reporting into corporate governance. While many firms in these economies have begun adopting sustainability reporting frameworks, issues such as weak regulatory enforcement, limited stakeholder awareness, and financial constraints hinder widespread implementation (Elijido-Ten & Clarkson, 2019). Despite these challenges, studies have indicated that sustainability reporting contributes to firm value by enhancing investor confidence, mitigating risks, and improving long-term profitability in emerging markets (Michelon, Pilonato, & Ricceri, 2015).

In Nigeria, sustainability reporting remains in its early stages, with many listed firms gradually adopting global sustainability standards. However, limited research exists on how sustainability reporting affects firm value in Nigeria's agricultural and natural resources sector. Given the sector's contribution to Nigeria's GDP and its susceptibility to environmental and social risks, understanding the role of sustainability reporting in shaping firm value is critical (Olayemi, 2021). This study aims to bridge this gap by examining the impact of sustainability reporting on the firm value of listed agriculture and natural resources firms in Nigeria. The regulatory framework guiding sustainability reporting in Nigeria is still evolving. The Financial Reporting Council of Nigeria (FRCN) and the Securities and Exchange Commission (SEC) have made efforts to promote sustainability disclosure through guidelines aligned with international

standards such as the Global Reporting Initiative (GRI) and International Financial Reporting Standards (IFRS) (Adegbite, Amaeshi, & Nakpodia, 2020). Additionally,

the Nigerian Stock Exchange (NSE), now NGX, launched its Sustainability Disclosure

Guidelines in 2018, mandating listed companies to report their ESG performance to enhance corporate transparency and accountability (NSE, 2018). Despite these efforts, compliance remains low, and many firms only disclose sustainability-related information to fulfill regulatory requirements rather than as a strategic initiative for value creation (Arowolo & Oyewumi, 2021).

Several studies have examined the impact of sustainability reporting on firm value in Nigeria. Empirical evidence suggests that firms with higher sustainability disclosures tend to experience enhanced financial performance, improved investor confidence, and reduced capital costs (Owolabi & Ajibade, 2022). In the agricultural and natural resources sector, sustainability reporting plays a critical role in ensuring responsible resource management, reducing environmental liabilities, and strengthening brand reputation (Egbunike & Tarilaye, 2019). However, research also indicates that many firms in these sectors still perceive sustainability reporting as an additional cost rather than a value-enhancing strategy (Okon, Edem, & Essien, 2020).

Sustainability reporting has gained global recognition as an essential tool for corporate transparency, accountability, and long-term value creation. It integrates environmental, social, and governance (ESG) disclosures, which have been increasingly linked to firm value in developed economies (Eccles, Ioannou, & Serafeim, 2014). Firms that actively engage in sustainability reporting are often perceived as less risky, more socially responsible, and financially stable, leading to higher investor confidence and market valuation (Fatemi, Glaum, & Kaiser, 2018). However, despite the growing adoption of sustainability reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), the empirical evidence on its direct impact on firm value remains inconclusive, particularly in emerging economies (Abiola, Yahaya, Adeyemo, & Adeyemi, 2024).

Globally, the adoption of sustainability reporting has been driven by increasing regulatory pressures, investor demands, and societal expectations for transparency and accountability (Eccles & Serafeim, 2013). In developed economies, studies have consistently shown that robust sustainability reporting practices enhance firm value by improving financial performance, reducing the cost of capital, and attracting socially responsible investors (Dwi, Bambang, & Yenni 2024, Shaban & Zarnoun 2024). However, in emerging economies like Nigeria, the adoption and impact of sustainability reporting remain underexplored, particularly in sectors such as agriculture and natural resources, which are critical to economic development but face significant sustainability challenges (Adegbite et al., 2019).

The agriculture and natural resources sector plays a pivotal role in the economy, contributing significantly to GDP, employment, and foreign exchange earnings (World Bank, 2020). However, the sector is also associated with environmental degradation, social conflicts, and governance issues, which have raised concerns among stakeholders (Okereke & Coke, 2010). Despite these challenges, the adoption of sustainability reporting among listed agriculture and natural resources firms in Nigeria remains inconsistent, with limited empirical evidence on its impact on firm value (Amaeshi et al., 2016). While some studies have examined the broader

implications of corporate social responsibility (CSR) in Nigeria, few have focused specifically on sustainability reporting and its influence on firm value, particularly in the agriculture and natural resources sector (Ali et al., 2017). Furthermore, the agriculture and natural resources sector is characterized by resource depletion, environmental degradation, and climate change

concerns, making sustainability reporting crucial for long-term corporate survival and stakeholder trust (Adebayo & Olawale, 2021). While studies have explored the impact of sustainability reporting on firm performance in developed economies, there is limited research on its effect on firm value, particularly using EPS as a performance metric in Nigeria's emerging market context (Mervelskemper & Streit, 2017; Uwuigbe, Egbide, & Ayokunle, 2020).

The lack of comprehensive research on this topic poses a significant problem for policymakers, investors, and firms in Nigeria. Without a clear understanding of how sustainability reporting impacts firm value, it is challenging to encourage widespread adoption of sustainable practices or to assess the effectiveness of existing initiatives such as the Nigerian Stock Exchange's Sustainability Disclosure Guidelines (NSE, 2018). Furthermore, the unique institutional and economic context of Nigeria, characterized by weak regulatory frameworks, limited stakeholder awareness, and high levels of informality, may influence the relationship between sustainability reporting and firm value in ways that differ from developed economies (Belal & Owen, 2015). This study seeks to address this gap by examining the impact of sustainability reporting on firm value among listed agriculture and natural resources firms in Nigeria. Specifically, it explores how sustainable environmental, social, and governance (ESG) disclosures influence firm value, measured by Earnings Per Share (EPS), while controlling for firm size. By providing empirical evidence on the relationship between sustainability reporting and firm value in an emerging economy context, this study aims to contribute to the global discourse on sustainability reporting and inform policy and practice in Nigeria. Therefore, the purpose of this study is to examine the impact of sustainability reporting on firm value in emerging economies. To achieve this, the study specifically;

i. Evaluate the effect of Sustainable environmental disclosure on firm value of listed Agriculture and Natural resources firms in Nigeria

ii. Evaluate the effect of Sustainable social disclosure on firm value of listed Agriculture and Natural resources firms in Nigeria

iii. Evaluate the effect of Sustainable governance disclosure on firm value of listed Agriculture and Natural resources firms in Nigeria

II. LITERATURE REVIEW

Conceptual Review

Firm Value

Firm value is a critical concept in corporate finance and accounting, serving as a fundamental measure of a company's financial health, market performance, and long-term viability. It is often used by investors, policymakers, and corporate managers to assess the attractiveness of a firm for investment, its ability to generate returns, and its strategic positioning in the market (Koller, Goedhart & Wessels, 2020).

Understanding firm value in the context of sustainability reporting is essential, particularly in emerging economies where firms operate within unique economic, regulatory, and environmental conditions. Several scholars and researchers have provided different definitions and perspectives on firm value.

According to Saheed, Kayode, and Abdulkadri (2023), firm value is the total worth of a business, often measured through financial metrics such as market capitalization, enterprise value, and intrinsic valuation models. Firm value encompasses both tangible and intangible assets, including future cash flows, brand reputation, and competitive positioning.

The connection between sustainability reporting and firm value has also attracted significant interest. In European healthcare industry for a period from 2015 to 2019, sustainability reporting has a connection with firm value (Nagat 2023). Sustainability reporting is positively related to firm’s market value of government-linked companies and family businesses in Singapore (Hilton & Bupe 2024). Evidence suggests that transparent sustainability practices can boost a company's reputation and, consequently, its firm value (Hod, Mohd, & Raja 2024). This is especially relevant in Malaysia, where regulatory frameworks and investor expectations are increasingly aligned with global sustainability standards. Tan (2023) found that Malaysian companies engaged in sustainability reporting tend to have higher firm values, indicating a positive link between ethical practices and financial performance.

Sustainability Reporting

Sustainability reporting has gained significant attention in both academic literature and corporate practice, particularly in emerging economies. It serves as a mechanism through which firms disclose their environmental, social, and governance (ESG) practices, thereby promoting transparency and accountability. Sustainability reporting has been defined in multiple ways by scholars and international organizations. According to the Global Reporting Initiative (GRI), sustainability reporting refers to "the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development" (GRI, 2021). Similarly, the International Integrated Reporting Council (IIRC) defines it as "a process founded on integrated thinking that results in a periodic report by an organization about value creation over time and related communications regarding aspects of value creation" (IIRC, 2020).

Schaltegger et al. (2017) describe sustainability reporting as "a structured approach for organizations to disclose their environmental, social, and economic performance to stakeholders, aimed at enhancing corporate credibility and long-term value creation." In contrast, Adams (2004) emphasizes that sustainability reporting is not merely a disclosure tool but a strategic instrument for improving corporate governance and accountability.

Sustainability reporting encompasses multiple dimensions, typically categorized under the ESG framework. Emerging economies, including Nigeria, face unique challenges in implementing sustainability reporting practices. Studies indicate that sustainability reporting adoption in these economies is often influenced by regulatory frameworks, stakeholder pressures, and market conditions (Amran & Haniffa, 2011). While developed economies have stringent sustainability disclosure requirements, many firms in emerging markets voluntarily adopt sustainability reporting to enhance corporate reputation and investor confidence (Kolk, 2010). For listed agriculture and natural resource firms in Nigeria, sustainability reporting is increasingly viewed as a strategic necessity rather than a compliance requirement. Regulatory bodies such as the Financial Reporting Council of Nigeria (FRCN) and the Nigerian Stock Exchange (NGX) are promoting sustainability disclosure guidelines to improve corporate transparency and attract foreign investments (Adegbite et al., 2019).

Sustainability reporting is an essential practice for firms operating in agriculture and natural resources sectors in Nigeria, particularly in enhancing transparency, accountability, and stakeholder trust. The adoption of sustainability reporting frameworks such as GRI and IIRC in emerging economies reflects a growing recognition of ESG principles in corporate governance. As regulatory pressures and investor demands increase, sustainability reporting will continue to evolve, significantly influencing firm value and long-term corporate sustainability.

Sustainable environmental disclosure

Sustainable environmental disclosure (SED) has gained significant attention as firms increasingly recognize the need to communicate their environmental performance to stakeholders. It serves as a critical component of sustainability reporting, particularly for firms operating in environmentally sensitive industries such as agriculture and natural resources. In emerging economies like Nigeria, SED plays a vital role in enhancing firm value by fostering transparency, improving investor confidence, and aligning business practices with sustainable development goals.

Several scholars and institutions have provided different definitions of sustainable environmental disclosure. Global Reporting Initiative (GRI) (2016) defines SED as "the process of disclosing environmental impacts, risks, and strategies of organizations to promote accountability and sustainability." Clarkson et al. (2008) describe SED as "the voluntary or mandatory reporting of a firm's environmental policies, practices, and performance aimed at providing stakeholders with relevant information on environmental management." Deegan (2002) defines it as "a firm’s communication of environmental information in financial and non-financial reports to signal environmental responsibility and compliance with regulatory and ethical expectations." Gray et al. (1995) consider SED as "a component of corporate social responsibility disclosure that provides information on how firms interact with their natural environment, including emissions, energy usage, waste management, and conservation efforts."

In emerging economies like Nigeria, the adoption of SED faces several challenges, including regulatory gaps, lack of enforcement, and limited awareness among firms. However, increasing investor demand for sustainability information and international reporting standards (such as GRI and IFRS Sustainability Standards) are driving improvements in disclosure practices (Iyoha & Oyerinde, 2010). Agriculture and natural resource firms in Nigeria are under heightened scrutiny due to their environmental impact, making SED a crucial tool for risk

mitigation and long-term value creation. Studies indicate that firms with high-quality environmental disclosures tend to experience enhanced firm value through improved financial performance, reputational benefits, and investor attraction (Akisik & Gal, 2011).

Sustainable Social Disclosure

Sustainable social disclosure (SSD) represents a critical component of sustainability reporting, focusing on how firms communicate their social performance, responsibilities, and impacts to a broad range of stakeholders. In the context of listed Agriculture and Natural Resources firms in Nigeria—an emerging economy where firms face unique socio-economic and regulatory challenges—SSD becomes particularly significant. Effective social disclosure not only enhances transparency but can also contribute to firm value by building stakeholder trust, improving reputation, and mitigating social risks (Orlitzky, Schmidt, & Rynes, 2003).

Various scholars have provided definitions that underscore the importance of social disclosure in corporate reporting. Matten and Moon (2008) define sustainable social disclosure as the process through which firms report on their corporate social responsibility (CSR) activities, including aspects such as employee welfare, community engagement, and ethical practices. Dahlsrud (2008) characterizes SSD as "the systematic reporting of a firm's policies, practices, and outcomes related to social sustainability," emphasizing its role in enabling stakeholders to assess corporate commitment to social responsibility. Clarkson et al. (2011) describe sustainable social disclosure as the voluntary dissemination of information regarding a firm's social impact, including labor practices, community development, and stakeholder engagement initiatives. These definitions collectively suggest that SSD is more than a compliance exercise; it is a strategic tool that can influence a firm's reputation and, ultimately, its market performance.

In emerging economies such as Nigeria, sustainable social disclosure is influenced by several contextual factors. Regulatory frameworks, stakeholder expectations, and cultural dynamics all play a role in shaping how firms report on their social activities. For Agriculture and Natural Resources firms—which often operate in regions with significant social challenges—the need for robust social disclosure is paramount. Empirical evidence suggests that firms with high-quality social disclosures tend to build greater reputational capital, which can lead to improved investor confidence and better access to capital (Chatterji, Levine, & Toffel, 2009). Moreover, effective SSD can mitigate social risks and foster long-term relationships with local communities, ultimately enhancing firm value.

Sustainable Governance Disclosure

Sustainable governance disclosure (SGD) is an integral component of sustainability reporting, focusing on how firms communicate their governance structures, policies, and practices in relation to long-term sustainability. For listed Agriculture and Natural Resources firms in Nigeria—an emerging economy where corporate governance practices are evolving—SGD is critical. It not only ensures transparency and accountability but also signals effective management and ethical decision-making to stakeholders, which in turn can enhance firm value (García-Sánchez, Martínez-Ferrero, & Rodríguez-Ariza, 2016).

Several scholars have articulated the concept of sustainable governance disclosure from varying perspectives. Eccles and Krzus (2010) define sustainable governance disclosure as the systematic reporting of corporate governance practices, including board composition, executive remuneration, and internal controls, as part of an integrated report that highlights a firm's commitment to sustainable long-term value creation. Clarkson et al. (2011) describe SGD as the voluntary or mandatory dissemination of information on a firm's governance

mechanisms that support ethical conduct, risk management, and stakeholder engagement, thereby enhancing corporate credibility. Adams (2004) emphasizes that governance disclosure should not be viewed solely as a regulatory requirement but as a strategic tool that improves transparency and fosters trust among stakeholders. These definitions collectively underscore that sustainable governance disclosure is more than a mere compliance activity; it is a strategic instrument for conveying a firm's commitment to ethical management and sustainable practices. In emerging economies such as Nigeria, the quality and extent of SGD are influenced by distinct challenges and opportunities.

Regulatory frameworks and enforcement mechanisms are often less mature than in developed markets, leading to variations in disclosure quality (Adegbite, Amaeshi, & Nakpodia, 2019). For Agriculture and Natural Resources firms in Nigeria, robust governance disclosure is particularly important due to the sector's exposure to environmental risks, social challenges, and operational uncertainties. Empirical studies suggest that firms with comprehensive governance disclosures tend to benefit from enhanced investor confidence, lower cost of capital, and improved market valuations (García-Sánchez et al., 2016; Mervelskemper & Streit, 2017). However, gaps in disclosure quality persist, underscoring the need for further research on how SGD can be improved and its direct impact on firm value in these contexts.

Theoretical Review

Stakeholder Theory

The growing emphasis on sustainability reporting in emerging economies, particularly in Agriculture and Natural Resources firms in Nigeria, aligns with the broader discourse on corporate accountability and value creation. Sustainability reporting entails the disclosure of economic, environmental, and social impacts of corporate activities, which influence firm value (Eccles & Krzus, 2010). One of the most relevant theoretical frameworks for understanding this relationship is Stakeholder Theory, which emphasizes the importance of addressing the needs of various stakeholders beyond just shareholders.

Stakeholder Theory was first introduced by Edward R. Freeman in 1984 in his seminal work, *Strategic Management: A Stakeholder Approach*. Freeman (1984) argued that firms do not operate in isolation but exist within a network of relationships that include investors, employees, customers, suppliers, government agencies, and society at large. Unlike the traditional Shareholder Theory, which prioritizes profit maximization for shareholders (Friedman, 1970), Stakeholder Theory advocates for a more inclusive approach, suggesting that firms should create value for all stakeholders to ensure long-term sustainability. The theory is particularly relevant to sustainability reporting in emerging economies because firms in sectors

such as agriculture and natural resources significantly impact multiple stakeholder groups, including local communities, environmental activists, and policymakers (Clarkson et al., 2011). Given the environmental risks and social concerns associated with these industries, transparent sustainability reporting is essential for building trust and enhancing firm value.

Sustainability reporting, guided by Stakeholder Theory, serves as a strategic tool for firms to communicate their social, environmental, and economic impacts.

This fosters accountability and trust among various stakeholders (Freeman et al., 2010). In the context of Nigeria's agriculture and natural resources sector, the theory explains why firms that actively engage in sustainability disclosure are more likely to experience enhanced firm value. Stakeholder Theory posits that firms should consider the expectations of all stakeholders, not just investors. In the Nigerian context, where environmental degradation and labor issues are common concerns in the agriculture and natural resources sector, sustainability reporting demonstrates a firm's commitment to ethical practices. Transparency in reporting strengthens relationships with stakeholders, enhances reputation, and can lead to increased customer loyalty and investor confidence (García-Sánchez et al., 2016).

Emerging economies such as Nigeria have evolving regulatory frameworks for corporate sustainability disclosure. Firms in regulated industries, including agriculture and natural resources, face increasing pressure from government agencies and international organizations to provide sustainability reports (Adegbite et al., 2019). Stakeholder Theory suggests that compliance with these expectations can help firms mitigate regulatory risks and improve their long-term sustainability. A key argument within Stakeholder Theory is that meeting stakeholder expectations leads to improved financial performance (Freeman et al., 2010). Firms that engage in sustainability reporting often experience lower risk exposure, higher investor confidence, and better access to capital markets (Clarkson et al., 2011). In the Nigerian agriculture and natural resources sector, sustainability reporting can enhance firm value by signaling responsible governance and risk management to investors. Another critical component of Stakeholder Theory is the inclusion of employees as key stakeholders. Transparent sustainability reporting that highlights fair labor practices, workplace safety, and diversity policies can improve employee morale and productivity (Eccles et al., 2012). Satisfied employees contribute to operational efficiency, which can positively impact financial performance.

Several empirical studies support the argument that sustainability reporting, when aligned with Stakeholder Theory, enhances firm value. Clarkson et al. (2011) found that firms with robust environmental and social disclosures experienced higher financial performance due to increased investor confidence and improved stakeholder relationships. Eccles et al. (2012) demonstrated that companies with high sustainability performance outperformed those with low sustainability practices in terms of stock returns, return on assets (ROA), and return on equity (ROE). García-Sánchez et al. (2016) observed that in emerging markets, including Nigeria, firms with proactive sustainability disclosures enjoyed lower cost of capital and improved profitability. These studies suggest that firms in Nigeria’s agriculture and natural resources sector can leverage sustainability reporting to improve their market valuation and attract long-term investments.

Empirical Review

The effect of sustainability reporting on a company's bottom line and value was investigated by Hod, Mohd, and Raja (2024). Using the three most popular theoretical frameworks—the theory of stakeholders, legitimacy, and signaling—to inform research. Overall, the results demonstrate that sustainability reporting does in fact raise the value of a company. Companies that disclose their sustainability performance see an increase in long-term financial success, investor trust, and reputational capital.

Regulatory settings, industry traits, and disclosure quality are a few of the many factors through which sustainability reporting impacts company value.

Further research is needed to determine the benefits of sustainability reporting on business value, while favourable relationships were observed. To further understand this connection, researchers need to identify the mediating variables and environmental factors. Sustainability reporting has the potential to strategically increase company value, which in turn improves corporate sustainability and financial performance. Researchers may give more specific insights into this topic.Using return on assets (ROA) as a mediator, Dwi, Bambang, and Yenni (2024) studied the relationship between sustainability reporting (SR) and good corporate

governance (GCG) and company value in Indonesia's manufacturing sector. Reasons for seeing financial performance as a road that encompasses the monetary results of SR and GCG procedures. From 2018 to 2022, the research used quantitative methodologies and secondary data obtained from reports of firms registered on the Indonesia stock market (IDX). to everyone's surprise, neither SR nor financial performance have any bearing on the value of a company. Nevertheless, the correlation between GCG and business value is moderated by financial performance, suggesting that strong governance boosts firm worth via improving financial health. To separate the operational effects of SR and GCG from their financial implications, the methodological tools used include variance inflation factor (VIF) analysis and partial least squares structural equation modelling (PLS-SEM). This helps to address concerns about redundancy and multi-collinearity.

From 2016–2022, industrial businesses listed on the Amman Stock Exchange (ASE) were studied by Shaban and Zarnoun (2024) to determine the effect of sustainability reporting (SR) on financial performance. This study examines the problems with economic sustainability (ES), environmental sustainability (ENS), and social sustainability (SOCS) that have persisted among Jordanian industrial companies for a long time. These problems are caused by a lack of disclosure indicators in annual reports, and the study focusses on ROA, ROE, and EPS as indicators of this lack of transparency. The study's methodology includes regression analysis with lagged independent variables, tests for multicollinearity and normal distribution, as well as the Pearson correlation matrix, variance inflation factor (VIF), and stationary testing. According to the results, market performance metrics like EPS and Tobin's Q have not been substantially affected by economic, environmental, and SOCS variables, while ROA and ROE have been favourably affected. It would seem that speculation, rather than sustainability disclosures, is the primary driver of market movements.

The overarching goal of Hilton and Bupe (2024) was to promote ethical business practices that benefit society, the environment, and the bottom line. To accomplish this goal, we focused on three areas: first, studying the SAR practices of Zambian companies listed on the LuSE; second, investigating the connection between SAR and firm value; and third, pinpointing the factors

that motivate these companies to adopt SAR policies. The research used a quantitative strategy for data collection and analysis in this way. The findings showed that there has been a steady rise in the number of sustainability activities. Nevertheless, there have been omissions about smaller businesses who are currently facing difficulties with their financial stability. The study also discovered that SAR has an effect on the value of the company and its overall performance. Additionally, at the 5% confidence level, there was a statistically significant but weak connection.

Return on Assets (ROA) is a dependent variable, while environmental and social sustainability indices are independent variables. The results show a modest correlation between the two, with a mean of 0.164 and a standard deviation of 0.169. The model's findings showed that sustainability factors related to the environment and society were critical to a company's worth. The listed firms on LuSE are positively and significantly impacted by the corporate sustainability reporting index, according to these data. Firm size, media prominence, and ownership structure were the primary drivers of SAR procedures; these factors have had a significant role in the publication of sustainability reports. In contrast, corporate governance seems to only impact the presence of audit or sustainability committees.

Sustainability reporting and firm value of listed deposit money banks in Nigeria were examined by Abiola, Yahaya, Adeyemo, and Adeyemi (2024). Researchers used an ex post facto methodology in their investigation. In order to test for multicollinearity, the variance inflation factor was used. From 2018 through 2022, the data series was sourced from the financial statements of the selected listed banks. At1%,5%, and 10% of the value of the listed deposit money institutions in Nigeria, ECS, ENV, and SOC, with coefficients of 0.0069, 0.2802, and 0.2235 and p-values of 0.879, 0.011, and 0.012, respectively, are positively significant. The firm value of the banks that were chosen will go up or down by one unit for each of these factors. This finding provides strong evidence that the model's explanatory variables were meaningful. As a result, the research found that Nigerian deposit money institutions may benefit from sustainability reporting.

Companies trading on the Saudi stock exchange between 2017 and 2021 were the subjects of an applied research by Nagat (2023). A total of 300 data points were derived from a sample of 60 companies. There were four ways to calculate a company's worth: Tobin's Q, market value, price/book value ratio, and security return. There is one indicator for the quantity of sustainability report disclosure and another for the quality of that disclosure. The study's variables were measured using the content analysis approach. The study's findings from the regression analysis support the hypothesis that there is a relationship between the quality and quantity of sustainability report disclosure and the value of the organisation. It also indicates that there is an inherent link between the two.

Researchers Dincer, Keskin, and Dincer (2023) looked at how listed Nigerian oil and gas companies' environmental, social, and economic sustainability reporting methods affected their firm value as measured by Tobin's Q. The majority of the information for the project came from secondary sources, including published yearly reports. Descriptive and correlation matrices make up the analytical tools. Multiple regression was used to evaluate the hypotheses.

Environmental sustainability reporting significantly increases the value of listed oil and gas firms in Nigeria, according to the study. Additionally, listed Nigerian oil and gas companies' values are significantly and negatively impacted by economic sustainability reporting. Firm size had a favourable influence on sustainability reporting and firm value among Nigerian oil and gas businesses, whereas firm characteristics, as measured by sales growth and leverage, had a negative effect. The research found that if a business complies adequately with sustainability regulations, it will attract more investors, which would boost the firm's worth. Academics and professionals alike have found performance to be an intriguing topic since the turn of the century due to its overlapping and diverse nature.

Companies in Nigeria, and especially those in the manufacturing sector, may benefit from sustainability disclosure, according to research by Saheed, Kayode, and Abdulkadri (2023).

The information was derived from 45 listed manufacturing enterprises' annual reports that were gathered from the Nigerian Stock Exchange during a span of eleven years (2010-2020). One method that was used to examine the data was GLS regression analysis. Firm value of Nigerian manufacturing enterprises is favourably and considerably impacted by environmental and social disclosure, according to the study's hypotheses and empirical findings. The research finds that the results support the study's main claim, which is that sustainable measures may help organisations create value via transparency and involvement.

Gap in Literature

The research on sustainability reporting and business value has shown the link between ESG disclosures and financial performance. Numerous studies have examined how sustainability reporting affects business value in established nations, but few in developing ones like Nigeria. Hod, Mohd, and Raja (2024) and Dincer, Keskin, and Dincer (2023) found that sustainability reporting increases company value in established and developing markets. Emerging economies typically have different institutional, economic, and regulatory frameworks than industrialised ones. In Nigeria, insufficient legal frameworks, low stakeholder knowledge, and significant informality may affect sustainability reporting in unknown ways (Belal & Owen, 2015). This gap emphasises the necessity for context-specific research to inform developing economy governments and enterprises. Nigeria relies on agriculture and natural resources for GDP, employment, and foreign exchange (World Bank, 2020). This industry also causes deforestation, pollution, and community disputes (Okereke & Coke, 2010). Despite these issues, little is known about how sustainability reporting affects business value in this area. Sustainability reporting in banking and manufacturing has been studied by Abiola, Yahaya, Adeyemo, and Adeyemi (2024) and Saheed, Kayode, and Abdulkadri (2023), but agriculture and natural resources have not. This gap is noteworthy considering the sector's prominence and sustainability reporting's capacity to solve its particular difficulties.

The literature on sustainability reporting and business value is conflicting. Hod, Mohd, and Raja (2024) observed that sustainability reporting typically increases company value, whereas Dwi, Bambang, and Yenni (2024) showed no direct effect in Indonesian manufacturing. Fatai, Florence, and Helen (2021) revealed that environmental sustainability disclosure may lower Nigerian banking business value. This mixed evidence suggests that sustainability reporting

and corporate value are complicated and may be affected by regulatory settings, industry characteristics, and disclosure quality. Due to its intricacy, further study is needed to identify the mediating variables and contextual factors that impact this association. In conclusion, the research on sustainability reporting and firm value has offered helpful insights but also shown considerable gaps, especially in developing economies and areas like agriculture and natural resources. These discrepancies suggest further study is needed to understand how sustainability reporting affects company value in Nigeria. This study seeks to further sustainability reporting research and inform policymakers, corporations, and other stakeholders in Nigeria and other developing countries by filling these gaps.

III. METHODOLOGY

This study employs an ex post facto research design, which is appropriate for investigating cause-and-effect relationships using archival data that already exist.

The population for this study comprises all the listed Agricultural and Natural Resources firms on the Nigerian Stock Exchange (NGX). Due to the manageable size of the population, the study adopts a census sampling approach. Specifically, the total sample consists of all listed firms in the relevant sectors on the NGX, which includes 4 Agricultural firms and 4 Natural Resources firms, making a total of 8 firms. Data for this study will be collected from secondary sources. Specifically, the following sources will be utilized, Annual Reports and Financial Statements and NGX and Public Databases. Additional data may be gathered from the Nigerian Stock Exchange website and other publicly available financial databases (e.g., Bloomberg, Thomson Reuters) to supplement the information obtained from the firms' own publications.

To ensure accurate and robust results, the study adopts Descriptive Statistics, Correlation Analysis and regression to test the objectives of this study.

Measurement of Variables

Variable	**Type**	**Operational Definition / Measurement Approach**	**Data Source**
Firm Value (EPS)	Dependent	Earnings Per Share (EPS) calculated as net income divided by outstanding shares, serving as a proxy for firm profitability and market valuation.	Annual Reports, Financial Statements
Sustainable Environmental Disclosure (SED)	Independent	An index developed through content analysis assessing the extent and quality of environmental disclosures (e.g., carbon emissions, energy consumption, waste management, water usage).	Annual Reports, Sustainability Reports

Variable	Type	Operational Definition / Measurement Approach	Data Source
Sustainable Social Disclosure (SSD)	Independent	A scoring system that evaluates the level and comprehensiveness of social disclosures (e.g., labor practices, community engagement, employee welfare, human rights).	Annual Reports, Sustainability Reports
Sustainable Governance Disclosure (SGD)	Independent	An index based on the reporting of governance practices, including board composition, executive compensation, ethical policies, and risk management disclosures.	Annual Reports, Sustainability Reports
Firm Size (FS)	Control	Measured by log of total assets of the firm.	Annual Reports, Financial Statements

Sources: Researcher compilation, 2025

Model Specification

To empirically examine the relationship between sustainability reporting and firm value, the following model is specified:

$$EPSit=\beta0+\beta1SEDit+\beta2SSDit+\beta3SGDit+\beta4FSit+\varepsilon it$$

Where: EPSit represents the Earnings Per Share of firm i at time t (dependent variable); SEDit , SSDit, and SGDit denote the environmental, social, and governance disclosure indices, respectively, for firm i at time t (independent variables); FSit is the firm size (control variable) for firm iii at time t; β0 is the intercept, β1 to β4 are the coefficients to be estimated, and it is the error term.

Data Analysis and Presentation

Descriptive Statistics

The descriptive statistics provide valuable insights into the distribution and variability of the key variables used in the study. Each variable was measured using data from 88 observations, ensuring consistency across the sample. Earnings Per Share (EPS), the dependent variable, the values range from -0.13 to 8.80 Naira, with a mean of approximately 1.60 Naira. The relatively high standard deviation of 2.10 indicates considerable dispersion around the mean, suggesting that the financial performance across the firms varies substantially. Moving to the independent variables, Sustainable Environmental Disclosure (SED) is measured on a scale from 0% to 100%, with a mean of 46.31% and a large standard deviation of 44.94%. Similarly, Sustainable Social Disclosure (SSD) shows a minimum of 0% and a maximum of 100%, with a mean of

51.14% and a standard deviation of 44.19%. The skewness is almost zero (-0.045), reflecting a symmetrical distribution, while a kurtosis value of -1.79 again points to a flat distribution. This suggests that SSD is broadly dispersed across firms, with most firms not clustering around a central value.

Sustainable Governance Disclosure (SGD), also measured on a percentage scale from 0% to 100%, has a mean of 57.95% and a standard deviation of 43.47%. The slight negative skew (-0.318) implies that the data are marginally skewed to the left, meaning a few firms may report slightly higher levels of governance disclosure than the majority. The kurtosis of -1.68 further confirms the flatness of the distribution, similar to SED and SSD. Finally, Firm Size (FS), the control variable, ranges from 2.370 to 4.756, with a mean of 3.51 and a standard deviation of 0.63. The relatively low standard deviation suggests that firm size is more homogeneous compared to the disclosure variables.

Table 2: Descriptive Statistics

	EPS (in Naira)	**SED**	**SSD**	**SGD**	**FS**
Minimum	-.13	0%	0%	0%	2.370
Maximum	8.80	100%	100%	100%	4.756
Sum	140.79	4075%	4500%	5100%	308.915
Mean	1.5999	46.31%	51.14%	57.95%	3.51039
Std. Deviation	2.09642	44.936%	44.190%	43.474%	.627354
Skewness	1.648 .257	.129 .257	-.045 .257	-.318 .257	.341 .257
Kurtosis	1.824 .508	-1.809 .508	-1.794 .508	-1.679 .508	-.708 .508

Sources: Researcher compilation, 2025

Correlation Statistics

The correlation coefficient between SED and EPS is 0.442 ($p = 0.000$), indicating a moderately strong positive relationship. This suggests that firms that engage in higher environmental sustainability disclosures tend to have higher earnings per share. This result aligns with prior studies suggesting that investors reward firms that prioritize environmental responsibility due to reduced risks, improved brand reputation, and long-term cost savings.

The correlation between SSD and EPS is 0.325 ($p = 0.002$), which is positive and statistically significant at the 1% level. While weaker than the SED-EPS relationship, this result suggests that increased social disclosures (such as labor practices, employee welfare, and community engagement) are associated with better firm performance. This may be due to the increased trust and goodwill such disclosures generate among stakeholders.The correlation between SGD and EPS is 0.239 ($p = 0.025$), which is significant at the 5% level. Although weaker than the relationships between EPS and SED/SSD, this result implies that firms with stronger governance disclosures tend to have higher financial performance. This finding supports the argument that greater transparency in governance enhances investor confidence, reduces agency conflicts, and strengthens financial sustainability.

There are strong interrelationships among the three sustainability disclosure measures.

This strong positive correlation indicates that firms with higher environmental disclosures are also likely to disclose social responsibility activities. This suggests that sustainability reporting is often comprehensive, with firms integrating multiple aspects of sustainability into their disclosures rather than focusing on a single dimension. The highest correlation among all variables, this near-perfect relationship suggests that firms with strong social disclosures are also committed to governance transparency. This may be because strong governance structures facilitate robust social responsibility practices. This correlation, while slightly lower than the SSD-SGD relationship, still indicates a strong connection between environmental responsibility and governance transparency. Firms with better governance mechanisms may be more inclined to implement environmental policies. This very strong positive correlation suggests that larger firms tend to have higher earnings per share. This result aligns with conventional financial theories, as larger firms often benefit from economies of scale, brand recognition, and greater access to financial resources. The correlation results reveal a positive relationship between sustainability reporting and firm value, indicating that firms that engage in more extensive sustainability disclosures tend to have higher financial performance. Overall, these findings support the argument that sustainability reporting enhances firm value in emerging economies, particularly in the listed agriculture and natural resources sectors in Nigeria.

Table 3: Correlation Statistics

Sources: Researcher compilation, 2025

Correlations

		EPS (in Naira)	SED	SSD	SGD	FS
EPS (in Naira)	Pearson Correlation	1				
	Sig. (2-tailed)					
SED	Pearson Correlation	.442**	1			
	Sig. (2-tailed)	.000				
SSD	Pearson Correlation	.325**	.813**	1		
	Sig. (2-tailed)	.002	.000			
SGD	Pearson Correlation	.239*	.758**	.956**	1	
	Sig. (2-tailed)	.025	.000	.000		
FS	Pearson Correlation	.836**	.578**	.316**	.266*	1
	Sig. (2-tailed)	.000	.000	.003	.012	

Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.870[a]	.757	.746	1.05714	.291

a. Predictors: (Constant), FS, SGD, SED, SSD

b. Dependent Variable: EPS (in Naira)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	289.605	4	72.401	64.786	.000[a]

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.870[a]	.757	.746	1.05714	.291

a. Predictors: (Constant), FS, SGD, SED, SSD

	Residual	92.757	83	1.118		
	Total	382.361	87			

a. Predictors: (Constant), FS, SGD, SED, SSD

b. Dependent Variable: EPS (in Naira)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.074	.790		-11.490	.000
	SED	-.018	.005	-.387	-3.390	.001
	SSD	.040	.010	.848	4.064	.000
	SGD	-.025	.009	-.527	-2.824	.006
	FS	3.112	.235	.931	13.257	.000

a. Dependent Variable: EPS (in Naira)

The R = 0.870 represents the multiple correlation coefficient, indicating a strong positive relationship between the independent variables and EPS. The $R^2 = 0.757$, this suggests that 75.7% of the variation in EPS is explained by the independent variables (SED, SSD, SGD, and FS). This high explanatory power implies that sustainability disclosures and firm size significantly impact earnings per share. The high F-value and significant p-value ($p < 0.01$) indicate that the overall regression model is statistically significant. This means that the combination of SED, SSD, SGD, and FS significantly predicts EPS.

The negative constant suggests that if all independent variables were zero, EPS would be negative. This is likely because firms require a baseline level of disclosure and size to generate positive earnings. Sustainable Environmental Disclosure (SED) (-0.018, p = 0.001) exhibit negative coefficient, indicating that increased environmental disclosures are associated with a

slight decrease in EPS. This could be due to the high initial costs of implementing environmental policies or regulatory compliance burdens. However, the relationship is statistically significant.

The positive coefficient of Sustainable Social Disclosure (SSD) (0.040, $p = 0.000$) suggests that social disclosures significantly improve EPS. This implies that firms investing in employee welfare, corporate social responsibility (CSR), and community engagement experience higher financial performance, possibly due to improved stakeholder trust and brand loyalty. Sustainable Governance Disclosure (SGD) (-0.025, $p = 0.006$) exhibit negative coefficient suggesting that higher governance disclosures are associated with lower EPS. This may be due to increased transparency requirements leading to higher compliance costs. However, the significance of this relationship indicates that governance practices impact financial performance. Firm size has the largest positive impact on EPS, with the highest standardized beta coefficient (0.931). This suggests that larger firms tend to have significantly higher earnings per share, likely due to economies of scale, market dominance, and better financial management.

IV. CONCLUSION AND RECOMMENDATIONS

This study set out to examine the impact of sustainability reporting on firm value in emerging economies, with a specific focus on listed Agriculture and Natural Resources firms in Nigeria. The primary objective was to investigate how various dimensions of sustainability reporting—namely sustainable environmental disclosure (SED), sustainable social disclosure (SSD), and sustainable governance disclosure (SGD)—influence firm value, as measured by Earnings Per Share (EPS). The analysis revealed several key findings. The regression results indicate that firm size plays a significant role in enhancing firm value, as larger firms tend to have higher EPS, reflecting economies of scale and better resource management. Notably, sustainable social disclosure (SSD) was found to have a positive and significant impact on EPS, suggesting that firms engaging in robust social reporting practices—such as transparent labor practices and community engagement—tend to achieve better financial performance. Conversely, sustainable environmental disclosure (SED) and sustainable governance disclosure (SGD) exhibited negative relationships with EPS. This suggests that, while these disclosures may be essential for long-term sustainability and regulatory compliance, they can also incur short-term costs that negatively affect profitability.

The correlations further demonstrated strong interrelationships among the sustainability disclosure dimensions and highlighted the dominant influence of firm size on financial performance. Therefore, this study concludes that sustainability reporting enhances firm value in emerging economies, particularly in the listed agriculture and natural resources sectors in Nigeria. Based on these findings, three recommendations are proposed:

Firms in the agriculture and natural resources sectors should prioritize and further invest in sustainable social disclosure. By improving transparency in areas such as employee welfare,

community development, and ethical practices, companies can build stronger stakeholder trust, leading to enhanced investor confidence and improved market performance.

Although environmental and governance disclosures are critical, their current negative impact on EPS suggests the need for more cost-effective and strategic reporting methods. Firms should consider streamlining their reporting processes and implementing efficiency measures to minimize compliance costs without compromising the quality and comprehensiveness of the information disclosed.

Policymakers and regulatory bodies in Nigeria should develop tailored guidelines that support sustainability reporting in emerging economies. By establishing frameworks that balance transparency with financial viability, regulators can help firms mitigate the short-term costs associated with environmental and governance disclosures, thereby promoting sustainable business practices that drive long-term firm value.

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Exploring the Complexities of Culture, Cultural Heritage, and Sustainable Development. A Nigerian Perspective

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ABSTRACT: Modern development frequently promotes globalization and urbanization with its attendants' modern consumerist values, leading to the marginalization of traditional cultural values and practices and erosion of local cultures and traditions. Development projects tailored towards globalization often encourage lifestyles and practices that are incompatible with traditional ways of living, promoting profligacies and permissiveness. Though developmental projects and globalization have brought economic growth and civilization to Nigeria, it has largely downplayed, the role of Cultural heritage in influencing the identity and aspirations of the future generation, and also shaping the present experience of the various communities in Nigeria. Cultural heritage encourages traditional practices that promote sustainability and responsible use of natural resources. While stressing the significance of cultural heritage, Madandola and Boussaa (2023) admitted that cultural heritage tourism can be identified as a catalyst for sustainable development if such sites are transformed into living heritage to promote economic growth and cultural preservation. It then becomes pertinent to develop inclusive plans and projects which take cognizance of the culture of local communities, stakeholders, and experts to create plans that balance preservation of cultural core values and development. The purpose of the study is to use the historical method to evaluate and determine the value of culture, cultural heritage in promoting sustainable development. It also discusses preservation and conservation of cultural heritage, as well as integration of cultural impact assessments into developmental projects in order to ensure they do not compromise the identity and well-being of local populations will produce a socially cohesive environment for sustainable development.

Keywords: Culture, Cultural heritage, Cultural impact assessment, sustainable development.

I. INTRODUCTION

Cultural practices and traditions often play a significant role in defining individual and collective identities, providing a sense of belonging and shared heritage among members of a community (Ajayi and Adediran, 2024). Culture influences social norms and values, dictating acceptable behavior within a society and shaping interpersonal relationships. They serve as guidelines for how individuals should behave in different social settings and help maintain social order and cohesion (Ogunjimi, and Abdul-Rasheed, 2017). Promotion of cultural identity contributes to societal stability, unity, and resilience especially in Nigeria, a nation marked by immense ethnic and cultural diversity, with each of the groups endowed with several unique cultural endowments as reflected in the National anthem, '…though tribe and tongue may differ, in brotherhood we stand…' Culture not only reflects societal values and beliefs but also serves as a catalyst for creativity and innovation in the arts.

Culture refers to an integrated system of beliefs (about God or reality or ultimate meaning), of values (about what is true, good, beautiful and normative), of customs (how to behave, relate to others, talk, pray, dress, work, play, trade, farm, eat etc), and of institutions which express these beliefs, values, and customs (government, law courts, temples or churches, family, schools, hospitals, unions etc), which binds a society together and gives it a sense of identity, dignity, security and continuity (Oderinde, 2013). Culture is an integral part of man. Culture is how human beings develop their knowledge and their attitudes towards life. It influences a people's communication and interaction with the physical environment. The World Bank (2006) also affirms that physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. Culture can be used as a stabilizing agent and an effective tool for arresting the tide of poverty, unemployment and misery; it can also be used to entrench progressive human development, enhance creativity and increase productivity for the common good, which in essence is what sustainable development is all about (Deekor, and Maekae, 2015).

Participation in a culture is one of the factors which provide humans with a sense of belonging. It gives a sense of security, of identity, of dignity, of being part of a larger whole. This implies that for any developmental project to be sustainable, it must take into consideration the human factors – human beings who will build, maintain and sustain the projects are products of culture whose definition of development and attitude to development are determined by culture. In essence, sustainable development of human society cannot be discussed without taking into consideration the cultural aspects that always come with human lifestyle (Deekor, and Maekae, 2015, 251). Also, understanding culture is an increasingly important issue because, it is believed that culture nourishes development, just as development also fosters culture (Carbone, 2016). The hegemonization of culture by the Western world or rather America, is an overt attempt to leave Nigerians without identity, individuality and personality. The overall effect of this is that the people become mindless atoms in the material world (Daniel,2014,32).

Cultural heritage is the legacy of tangible and intangible assets inherited from past generations, preserved in the present, and passed on to future generations (Nomishan, and Sani, 2023). Further, scholars have argued that Cultural heritage can be seen as an expression of the ways of living which is developed by communities which is in turn transferred from one generation to another generation including customs, practices, places, objects, artistic expressions and values (ICOMOS, 2024). Cultural heritage represents the identity and collective memory of a community, serving as a vital link between the past, present, and future.

In Nigeria, cultural heritage holds immense significance due to the country's rich diversity, which includes over 250 ethnic groups and an array of languages, traditions, and practices.

It reflects the unique identities and shared histories of these communities while contributing to a sense of belonging and national unity. Additionally, Nigeria's cultural heritage serves as a resource for education, tourism, and economic development, offering opportunities for employment and international recognition. Preserving and promoting cultural heritage is essential not only for maintaining the country's historical and cultural identity but also for fostering social cohesion and resilience in the face of globalization and other challenges. Cultural heritage promotes sustainable development, encouraging responsible use of natural resources and preservation of traditional practices. It is pertinent for stakeholders to take cognizance of the intricacies between cultural security and sustainable development because without social cohesion and a friendly environment which culture promotes, development projects cannot subsist.

II. RESULTS AND DISCUSSIONS

According to the Nigerian Ministry of Foreign Affairs (2024), the Nigerian government launched the **National Cultural Policy** in September 1988. This policy defined culture as the complete way of life developed by a group of people as they adapt to the challenges of their environment. It provides structure and significance to their social, political, economic, aesthetic, and religious practices, as well as their organizational methods, thereby distinguishing them from their neighbors. Building on this, the Federal Government established the **Federal Ministry of Culture and Tourism** in June 1999. By mid-2006, it was renamed the **Federal Ministry of Tourism, Culture, and National Orientation,** tasked with promoting Nigeria's rich cultural heritage through the identification, development, and marketing of its diverse cultural and tourism assets. In 2015, the Ministry of Culture and Tourism merged with the Ministry of Information, forming the **Ministry of Information, Culture, and Tourism.** Nigeria's cultural heritage is broadly categorized into two key elements: tangible heritage and intangible heritage. In the words of Nomishan, T. and Sani, A. (2023, 295), "intangible cultural heritage refers to the expressions, practices, knowledge, skills, and the tools, objects, artifacts, and cultural spaces linked to them, that communities, groups, and sometimes individuals identify as part of their cultural legacy." It encompasses the full spectrum of knowledge gained from the evolution and experience of human practices. It also involves the spatial, social, and cultural constructions that may be encapsulated in the word "memory". Intangible cultural heritage is valuable in maintaining cultural diversity" (Okoro 2022, 52). An understanding of the intangible cultural heritage of different communities aids intercultural dialogue and encourages mutual respect for others' ways of life.

As stated by UNESCO (2019), intangible cultural heritage is contemporary, traditional, and living at the same time; as well as inclusive; representative; and community based. Such intangible cultural heritage is transmitted from one generation to another and is constantly recreated by communities and groups in response to their environmental changes, cultural changes, and historical discoveries. This provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. In Nigeria, the tangible cultural heritage reflects the rich histories and identities of the diverse ethnic groups, showcasing a blend of ancient traditions, craftsmanship, and architectural ingenuity. Nigeria is home to UNESCO World Heritage Sites such as the Sukur Cultural Landscape in Adamawa State and the Osun-Osogbo Sacred Grove in Osun State. Other notable sites include the ancient

walls of Kano, the Benin Moat, and various colonial-era architectural landmarks. The Ife Kingdom produced lifelike brass and terracotta sculptures, reflecting the kingdom's artistic sophistication and spiritual significance while dating back to the 9th century, Igbo Ukwu bronzes and other artifacts reveal the advanced metallurgical skills of the Igbo people.

Other tangible cultural heritage includes the traditional architecture of the Zuma Rock in Niger state, ancient royal palaces, traditional mosques like the **Zaria Mosque** and the **Gidan Makama Museum,** which display unique Hausa architectural styles (Nomishan, Tubi,and Gubam, 2023,678). Furthermore, there are religious sites such as the sacred Osun Osogbo grove, and slave trade relics in Badagry as well as other museums holding Nigeria precious artefacts.

These heritages reinforce the unique identities of Nigeria’s ethnic groups, fostering pride and unity, attracting tourism, providing revenue and employment opportunities for local communities, serve as tools for learning and understanding Nigeria’s rich history and strengthens Nigeria’s place on the global stage, showcasing its contributions to human civilization. The Nigerian culture with its high moral standard is gradually collapsing and affecting nation building. The moral way of life of Nigerians is one that was very admirable (Ahmad, 2006,298). Some of the cherished moral values in Nigerian societies such as hospitality, politeness, kindness, generosity, honesty are far declining. There has been a breakdown in these moral values and norms in Nigeria as various crimes, dishonesty, greed and ignorance have become prevalent in the society.

Preserving Nigeria’s tangible cultural heritage is essential for maintaining the nation’s historical legacy and ensuring that future generations can connect with their past. Preservation of these cultural heritage is crucial for maintaining traditional ways of life that remain relevant to contemporary societies. It serves as a bridge between the past and the present and provides a foundation for the future. However, the preservation of Nigerian cultural heritage faces threats from human activities, natural forces, and biological and chemical agents (Ogundele, 2014). One of the most significant destructive human actions against Nigerian cultural heritage took place during the punitive expedition of 1897, when the British colonials attacked the Benin culture area, looted the royal palace's valuable bronze works and art treasures, and exiled the King to Calabar, where he eventually died in 1914 (Eluyemi, 2002). In similar vein, the current condition of Nigeria's indigenous linguistic heritage is best described as endangered, with many languages on the brink of extinction (Shyllon, 2007) because of the enforcement of English language as the lingual franca and introduction of foreign literatures. Also, the Western missionaries introduced Christianity and relegated Nigerian traditional religions to the status of idol worship, labeling their practitioners as heathens and unbelievers (Eluyemi, 2002).

In the entertainment sector, traditional roles such as poets, praise-singers, clowns, comedians, and dramatists in royal courts, along with indigenous dances, songs, costumes, and musical instruments like drums, were gradually replaced by Western influences. This cultural shift occurred without widespread awareness of its long-term implications until a few expatriates recognized the necessity of preserving Nigerian cultural heritage (Onyima, 2016). “Nigerian youths are rapidly losing touch with cultural values, and this could be seen in the alien culture which they portray; their bizarre dressing, dancing, language and so on which invariably affect other aspects of social life” (Oni, 2018,2). The challenges facing the

preservation of Nigeria's cultural heritage are many, spanning from communal and ethnic conflicts to religious fundamentalism, which includes the intentional burning and destruction of monuments, shrines, and sacred sites deemed offensive or heretical by the adherents of resurgent religions. All this falls short of the noble intent and overarching goal of sustainable development.

Sustainable Development has to do with the development that meets the needs of the present and does not compromise the ability of future generations to meet theirs (Cerin, 2006; Dernbach 2003).

In principle, sustainable development integrates environmental, social, and economic concerns into all aspects of decision making. Two important concepts are kept in view in sustainable development. The first is the concept of needs (especially the need of the world's poor), and the second is the idea of limitations of the environment to meet those needs. Sustainable development seeks to balance the economic, environmental, and social dimensions of development in a long-term and global perspective. A broad view of human welfare, and also, a long-term perspective about the consequences of today's activities is implied in the concept. It also includes the full involvement of civil society to reach viable solutions to human predicaments (OECD, 2011). In its goal, sustainable development embodies a global policy framework intending to bring about the eradication of poverty in all forms, environmental preservation, combat inequality, and ensure prosperity and peace (Simovski, 2019). While protecting the long-term value of the social and physical environment, sustainable development aims to maintain economic advancement and progress. As such, sustainable development projects do not destroy people's social life but enhance it through conscious preservation of their cultural heritages.

III. CONCLUSION

Sustainable development becomes feasible only when development projects are culturally sensitive. Emphasizing culture means giving members of the community an actual role in directing their own destinies, restoring the agency for change to those whom the development efforts are intended to impact, which is crucial to sustainable development (Deekor, Leelee Nwiibari & Maekae, Job, 2015). All stakeholders need to ensure projects align with the values and priorities of the local communities. Large-scale infrastructure projects, urbanization, introduction of new technologies and designs must be done in such a way that minimize destruction of cultural heritage and environmental natural resources. Decline in the use of indigenous languages in preference for English language has eroded the transmission of cultural knowledge and values embedded in the local languages. It disrupts the cultural heritage of communal living and shared responsibilities while promoting nuclear family setups in cities, all in the name of globalization thus reducing the influence of elders and traditional values on the younger generation. This certainly has negative implications for sustainable development in Nigeria. The younger generation has less interest in indigenous belief systems and practices, such as Yoruba Ifa divination and Igbo traditional worship which helped to curb acts of irresponsibility, criminality, insubordination, and corruption before globalization. Government needs to develop and implement deliberate policies to preserve Nigeria's rich cultural heritage, cultural identity, ensuring it coexists with modernization, to have sustainable development. Globalization has brought about a dual impact. While it has opened doors for international

recognition and celebration of Nigerian culture, it has also posed substantial threats to the preservation of traditional values and practices.

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